

SOMERVILLE PUBLIC LIBRARY



3 1155 00760 2779

C  
REF

6319 70692



Geotechnical  
Environmental  
Water Resources  
Ecological

MassDEP RTN 3-23246

# Phase V Status Report No. 5 and Remedial Monitoring Report No. 20

50 Tufts Street, Somerville, Massachusetts

**Submitted to:**

UniFirst Corporation  
68 Jonspin Road  
Wilmington, MA 01887

**Submitted by:**

GEI Consultants, Inc.  
400 Unicorn Park Drive  
Woburn, MA 01801  
781-721-4000

REF  
354  
353  
GEI

February 10, 2014

Project 04516-3

REF  
354.  
353  
GEI

Helen S. Gladstone, P.E., LSP, LEED AP  
Vice President



# Table of Contents

---

<b>Acronyms and Abbreviations</b>	<b>v</b>
<b>Executive Summary</b>	<b>vii</b>
<b>1. Introduction</b>	<b>1</b>
1.1 Contact Information	1
1.2 Background	2
1.3 Purpose and Scope	4
1.4 Public Involvement (310 CMR 40.1400)	4
<b>2. Data Collection</b>	<b>6</b>
2.1 Groundwater Sampling	6
2.2 Indoor Air Sampling	6
<b>3. Capuano Center Phase IV Activities</b>	<b>7</b>
3.1 Background	7
3.2 Remedial Objectives	7
3.3 Inspection and Monitoring	7
3.4 Performance Efficiency and Effectiveness	8
3.5 Management of Waste Materials	8
3.6 System Modifications	8
3.7 Future Phase V Activities	9
<b>4. Residential and Commercial Properties Phase IV Activities</b>	<b>10</b>
4.1 EPEM Installation	10
4.1.1 Remedial Objectives	11
4.2 Option 1 EPEMs	11
4.2.1 Operation and Monitoring	12
4.2.2 Efficiency and Effectiveness	12
4.2.3 System Maintenance and Modifications	13
4.2.4 Management of Waste Materials	13
4.3 Option 2 and 3 EPEMs	13
4.3.1 Operation and Monitoring	14
4.3.2 Efficiency and Effectiveness	14
4.3.3 System Maintenance and Modifications	14
4.3.4 Management of Waste Materials	14
4.4 Activity and Use Limitations	14
4.5 Response Action Outcomes	15
4.5.1 Class A-3 RAO-P	15
4.5.2 Class B-1 RAO-P	16



4.6	Future Phase V Activities	16
4.6.1	EPEM Operation and Monitoring	16
4.6.2	EPEM Modifications	16
4.6.3	Installation of New EPEMs	16
4.6.4	AULs and RAOs	17
<b>5.</b>	<b>60 Tufts Street</b>	<b>18</b>
5.1	Background	18
5.2	Remedial Objectives	18
5.3	Inspection and Monitoring	18
5.4	Performance Efficiency and Effectiveness	19
5.5	Management of Waste Materials	19
5.6	System Modifications	19
5.7	Future Phase V Activities	19
<b>6.</b>	<b>50 Tufts Street Property</b>	<b>20</b>
6.1	Background	20
6.2	Remedial Objectives	20
6.3	Inspection and Monitoring	20
6.4	Performance Efficiency and Effectiveness	22
6.5	Management of Waste Materials	22
6.6	System Modifications	23
6.7	Future Phase V Activities	23
<b>7.</b>	<b>Monitored Natural Attenuation</b>	<b>24</b>
7.1	MNA Program Objectives	24
7.2	MNA Activities	24
<b>8.</b>	<b>Remedial Monitoring Report No. 20</b>	<b>26</b>
<b>9.</b>	<b>References</b>	<b>27</b>

**Tables**

2-1	Summary of Groundwater Sampling Activities
2-2	Chemical Testing Results – Groundwater
3-1	Summary of SSDS Monitoring Events – Capuano Center
3-2	Chemical Testing Results –Indoor Air – Capuano Center
4-1	Exposure Pathway Elimination Measure (EPEM) Status
5-1	Summary of SSDS Monitoring Events – 60 Tufts Street



6-1 Summary of SSDS Monitoring Events – 50 Tufts Street

7-1 Groundwater Elevations

## Figures

---

1-1 Site Location Map

1-2 Disposal Site Map and Site Boundary

2-1 Monitoring Well Locations

2-2 Sub-Slab Soil Vapor and Indoor Air Sampling Locations

4-1 EPEM Installation Progress

4-2 EPEM Mitigation Flow Chart

4-3 RAO Status

6-1 Combined Influent VOC Concentrations and Cumulative VOC Removal

## Appendices

---

A. MassDEP Transmittal Forms (BWSC-108, BWSC-108A, and BWSC-108B)

B. Property Owner Notification Letters

C. Laboratory Testing Reports

D. Field Monitoring Forms and Inspection Logs

E. Disposal Documentation

SLS/JDR/ISG:csh

N:\04516\15.0 Report Original\15.93 Phase V SR #5 & RMR #20 RTN 3-23246 (Feb 2014)\Phase V SR 5 RMR 20 2014-02-10.docx





## Acronyms and Abbreviations

---

$\mu\text{g}/\text{m}^3$	micrograms per cubic meter
AUL	Activity and Use Limitation
CEP	Critical Exposure Pathway
COPC	Compounds of Potential Concern
CRA	Comprehensive Remedial Action
CSA	Comprehensive Site Assessment
DNAPL	dense non-aqueous phase liquid
EPA	U.S. Environmental Protection Agency
EPEM	Exposure Pathway Elimination Measure
FIR	Final Inspection Report
GEI	GEI Consultants, Inc.
IH	Imminent Hazard
IRA	Immediate Response Action
lbs	pounds
LQG	Large Quantity Generator
MassDEP	Massachusetts Department of Environmental Protection
MCP	Massachusetts Contingency Plan
mm	millimeter
MNA	Monitored Natural Attenuation
NSR	No Significant Risk
O&M	Operation and Maintenance Manuals
OMM	Operation, Maintenance and Monitoring
PCE	tetrachloroethylene (perchloroethylene)
PID	photoionization detector
ppm	parts per million
PVC	polyvinyl chloride
RAA	Remedial Action Alternative
RAM	Release Abatement Measure
RAO	Response Action Outcome



RAP	Remedial Action Plan
RIP	Remedy Implementation Plan
RMR	Remedial Monitoring Report
ROS	Remedy Operations Status
RTN	Release Tracking Number
SQG	Small Quantity Generator
SSDS	sub-slab depressurization system
SVE	soil vapor extraction
TCA	1,1,1-trichloroethane
TCE	trichloroethylene
VOC	volatile organic compound



## Executive Summary

---

On behalf of UniFirst Corporation (UniFirst) of Wilmington, Massachusetts, GEI Consultants, Inc. (GEI) prepared this Phase V Status Report No. 5 and Remedial Monitoring Report (RMR) No. 20 for the site located at 50 Tufts Street in Somerville, Massachusetts (the Site). The Site is identified by Massachusetts Department of Environmental Protection (MassDEP) Release Tracking Number (RTN) 3-23246. The Site includes the 50 Tufts Street property (the Property), other properties in the neighborhoods east and immediately north, south, and west of the Property, and the Michael E. Capuano Early Childhood Center (Capuano Center) located at 150 Glen Street in Somerville, Massachusetts. This report covers the period from June 16 through December 15, 2013.

### Background

From approximately 1955 to 2002, the Property was used for storage and distribution of industrial chemicals, laundry supplies, and dry cleaning supplies. Chemicals stored at, and transported to and from the Property, included chlorinated volatile organic compounds (VOCs). These chlorinated VOCs – particularly tetrachloroethylene (also called perchloroethylene [PCE]), trichloroethylene (TCE), and 1,1,1-trichloroethane (TCA) – have been detected in soil, soil vapor, indoor air, and groundwater at the Property and are therefore the compounds of potential concern (COPCs) for the Site. In some buildings within the Site, chlorinated VOCs have been detected in indoor air samples.

The detection of chlorinated VOCs in indoor air at some buildings required the implementation of an Immediate Response Action (IRA). The “Immediate Response Action Plan” associated with RTN 3-23246 was submitted to MassDEP on January 9, 2006. The Site is currently classified Tier IC (Permit No. W085813). The “Phase II Comprehensive Site Assessment, Method 3 Risk Characterization, and Phase III Remedial Action Plan” (Phase II/III) for the Site was submitted to MassDEP on July 14, 2008. The “Phase IV Remedy Implementation Plan” (Phase IV RIP) was submitted to MassDEP on August 10, 2009. The “Immediate Response Action Completion Report and Remedial Monitoring Report No. 11” (IRAC Report) was submitted to MassDEP on November 13, 2009, and the “Immediate Response Action Completion Report Amendment,” (IRAC Report Amendment) was submitted to MassDEP on April 1, 2011. The “Phase IV Final Inspection Report, Remedial Monitoring Report No. 15, and Phase V Remedy Operation Status Report” (Phase IV FIR/Phase V ROS) was submitted to MassDEP on August 4, 2011.

The remedial action alternative (RAA) selected by the Phase III evaluation included:



1. Installing Exposure Pathway Elimination Measures (EPEMs) to the extent feasible (e.g. vapor barrier and venting system, or sub-slab depressurization systems [SSDSs]), and recording Activity and Use Limitations (AULs) as appropriate, for residences where the soil vapor migration pathway to indoor air has been confirmed, and installing EPEMs in occupied commercial buildings to reduce chlorinated VOC concentrations in indoor air to that which constitutes a condition of No Significant Risk (NSR).
2. Continuing to operate the soil vapor extraction (SVE) system at the Property to remove COPCs from the vadose zone.
3. Conducting a Site-wide Monitored Natural Attenuation (MNA) program to evaluate overburden and bedrock groundwater plume concentrations over time to assess the rate of natural attenuation processes, and to confirm that groundwater concentrations of chlorinated VOCs are generally stable or decreasing.

The Phase IV FIR/Phase V ROS documented that construction and implementation of the Comprehensive Response Action (CRA) had been completed; and additional activities, such as operation and monitoring of active remedial systems, would be conducted under Phase V ROS.

In accordance with the Massachusetts Contingency Plan (MCP), particularly 310 CMR 40.0892, this Phase V Status Report No. 5 and RMR No. 20 includes the following information regarding the remedial actions being conducted at the Site:

- A description of the type and frequency of operation, maintenance, and/or monitoring (OMM) activities.
- A description of any significant modifications made to the OMM activities since the last reporting period.
- An evaluation of the performance of the remedial action during the reporting period, including whether the remedial action is achieving remedial goals specified in the Phase IV RIP as described in 310 CMR 40.0874(3), and a description of any conditions or problems noted during the reporting period that are, or may be, affecting the performance of the remedial action.
- A description of the measures taken to correct any conditions or problems that may have been encountered during the reporting period.

A summary of OMM and Release Abatement Measure (RAM) activities conducted at the Site are as follows:





## Capuano Center

An SSDS is installed in the east wing of the Capuano Center. In addition, GEI sealed certain slab/wall joints at the Capuano Center to mitigate a potential preferred migration pathway. GEI has conducted 23 rounds of indoor air sampling since the SSDS was installed in February 2007. The soil vapor migration pathway to indoor air has been eliminated and a condition of NSR has been achieved for occupants of the Capuano Center. Accordingly, it is GEI's opinion that the system was constructed and is operating in accordance with the design standards provided in the Phase IV RIP, and has achieved the remedial objectives.

Given that it has been determined that the system is achieving its remedial design objectives, GEI has discontinued indoor air sampling, but will continue to inspect and maintain the system. GEI will continue to monitor operational parameters and sub-slab conditions for the system (e.g., flow rate, vacuum) at the headers on a monthly basis, and collect readings from all indoor and outdoor monitoring points quarterly, to confirm ongoing system performance. GEI will continue operation and monitoring of the SSDS at the Capuano Center under ROS.

GEI performed pilot testing of the Capuano Center SSDS in August and October 2013 to evaluate replacing the existing blower setup with one or more radon fans. The pilot testing indicates that a system modification with three radon fans installed on three dedicated ventilation pipes will provide similar or slightly improved sub-slab vacuum throughout the target zone. GEI is currently communicating with the Capuano Center to identify an SSDS layout that achieves the performance objectives and blends with the existing building architecture.

## Residential and Commercial Properties

As part of the IRA, while Site conditions were still under investigation, GEI took timely action to evaluate and implement measures to eliminate or mitigate Critical Exposure Pathways (CEPs) to the extent feasible. The feasibility of such measures was determined by physical conditions, including the suitability of each property to installation of active or passive vapor controls, and by amenability of property owners to provide legal access. Mitigative measures were initially implemented as IRA activities. The Phase II/Phase III assessment and evaluation of RAAs included response actions to address CEPs as part of the recommended CRA. With the submittal of the Phase IV RIP, the IRA addressing CEPs was closed with an IRAC Report and an IRAC Report Amendment, in accordance with the MCP (310 CMR 40.0427). Following the submittal of the IRAC Report and IRAC Report Amendment, all further response actions were continued under Phase IV. Construction and implementation of the CRA has been completed; and additional activities, such as operation and monitoring of active remedial systems, will be conducted under Phase V ROS.



Following is a summary of activities conducted and results obtained with respect to EPEMs through December 15, 2013:

- EPEMs have been installed in 20 residential and commercial properties, not including the EPEMs installed at 50 Tufts Street, 60 Tufts Street, and the Capuano Center. The results of post-EPEM installation indoor air sampling indicate that each of the 20 EPEMs has achieved the remedial objectives.
- GEI is providing environmental oversight in connection with construction of a two-family residential building at 34 Knowlton Street. GEI submitted a RAM Plan on behalf of the building developer on December 4, 2013. Response actions in the RAM Plan included construction and testing of a vapor barrier, and installation of sub-slab ventilation piping beneath the building. Building construction is expected to be completed in spring 2014. Following the completion of building construction, GEI will perform confirmatory indoor air testing to demonstrate that the vapor intrusion mitigation measures are effective, and confirm that COCs are not present in indoor air at concentrations that would pose significant risk to future building occupants.
- The Method 3 Risk Characterizations prepared for the Site have demonstrated that a condition of NSR exists at individual properties at the Site, with the exception of 9, 17, and 19 Tufts Street and 105-107 Washington Street (see below).
- As documented in the IRAC Report Amendment, the owners of 9, 17, and 19 Tufts Street and 105-107 Washington Street have denied GEI access to enter their residences and install an EPEM, despite numerous oral and written requests from both GEI and MassDEP. Therefore, implementation of remedial systems to achieve a condition of NSR on these properties is infeasible. In the event that an owner of one of these properties indicates in the future that access will be granted, and results of indoor air sampling indicate that a condition of NSR has not been achieved, an EPEM will be installed. As part of the CRA, including ongoing operation of the SSDS and SVE systems on the Property and MNA, environmental conditions will continue to be addressed at the Site as a whole.
- GEI will continue to perform active monitoring and maintenance of Option 1 EPEMs under ROS. A Response Action Outcome Partial (RAO-P) Statement will be submitted for each property with an Option 2 or 3 EPEM where the EPEM has achieved the remedial objectives, an AUL has been recorded for the property to maintain the integrity of the EPEM, and sufficient post-EPEM indoor air sampling has been conducted. The filing of an RAO-P Statement for an individual property documents the achievement of regulatory closure under the MCP. Therefore, the Phase V provisions will not apply to properties for which an RAO-P Statement has been submitted. During this reporting period, GEI submitted RAO-P Statements for 32 Franklin Avenue, 66-66A Franklin Avenue, and 81-83 Washington Street.



- GEI acknowledges that MassDEP is in the process of promulgating amendments to the MCP. GEI may re-evaluate procedural options for submitting RAO-P Statements for Option 1 EPEMs once those amendments have been finalized.

## **60 Tufts Street**

An SSDS is installed in the 17-unit condominium building at 60 Tufts Street. The SSDS monitoring data show that the sub-slab vacuum field generated by the SSDS influences nearly the entire floor slab area. Indoor air testing results indicate that a condition of NSR has been achieved for building occupants at 60 Tufts Street. Accordingly, it is GEI's opinion that the system was constructed and is operating in accordance with the design standards provided in the Phase IV RIP, and has achieved the remedial objectives.

Given that it has been determined that the system is achieving its remedial design objectives, GEI has discontinued indoor air sampling, but will continue to inspect and maintain the system. GEI will continue to monitor operational parameters and sub-slab conditions for the system (e.g., flow rate, vacuum) on a monthly basis to confirm ongoing system performance. GEI will continue operation and monitoring of the SSDS at 60 Tufts Street under ROS.

## **50 Tufts Street Property**

An SSDS and an SVE system are installed at the Property. The SSDS monitoring data show that the sub-slab vacuum field generated by the SSDS covers most of the building slab area. The building is currently occupied by several tenants. Based on indoor air testing results collected since the combined system has been in operation, a condition of NSR has been achieved for the building at the Property for full-time commercial workers. Accordingly, it is GEI's opinion that the system was constructed and is operating in accordance with the design standards provided in the Phase IV RIP, and has achieved the remedial objectives. GEI will continue operation and monitoring of the combined SSDS/SVE system at 50 Tufts Street under ROS.

## **50 Tufts Street Contaminant Mass Removal**

The combined SSDS/SVE system installed at the Property serves to protect indoor air quality and to remove source material from the vadose zone below and around the building. Monitoring data from both the SSDS and SVE components through November 18, 2013 show that approximately 8,033 pounds (lbs) of VOCs have been removed from the vadose zone at the Property. GEI will continue operation and monitoring of the combined SSDS/SVE system at 50 Tufts Street under ROS.



## **Monitored Natural Attenuation**

An evaluation of the MNA program indicates that the groundwater plumes are stable. GEI will conduct groundwater sampling once per year at the majority of monitoring wells at the Site to confirm that the overburden and bedrock groundwater plumes remain stable.

During this reporting period, semi-annual groundwater sampling was conducted at monitoring wells MW112A, MW118D, MW121D, and MW122 to monitor recent fluctuations in groundwater concentrations at these locations. The concentrations decreased slightly in MW122, MW112A, and MW118D, and increased slightly in MW121D. These results are within a range of fluctuation that is consistent with continuing plume stability, particularly when considered in context with prior groundwater results from all monitoring wells. GEI will perform additional groundwater sampling in spring 2014.

## **Remedial Monitoring Report No. 20**

Remedial Monitoring Report No. 20, documenting OMM activities of active remedial systems at the Site, is presented in the BWSC-108A and 108B Transmittal Forms in Appendix A.





# 1. Introduction

---

On behalf of UniFirst Corporation (UniFirst) of Wilmington, Massachusetts, GEI Consultants, Inc. (GEI) prepared this Phase V Status Report No. 5 and Remedial Monitoring Report (RMR) No. 20 for the site located at 50 Tufts Street in Somerville, Massachusetts (the Site; Fig. 1-1). The Site is identified by Massachusetts Department of Environmental Protection (MassDEP) Release Tracking Number (RTN) 3-23246. The Site includes the 50 Tufts Street property (the Property), other properties in the neighborhoods east and immediately north, south and west of the Property, and the Michael E. Capuano Early Childhood Center (Capuano Center) located at 150 Glen Street in Somerville, Massachusetts (Fig. 1-2). This report covers the period from June 16 through December 15, 2013.

## 1.1 Contact Information

**Person responsible for submittal of the Phase V Status Report:**

Tim Cosgrave  
Senior Manager, EHS  
UniFirst Corporation  
68 Jonspin Road  
Wilmington, MA 01887  
978-658-8888

**Licensed Site Professional (LSP):**

Ileen S. Gladstone, P.E., LSP, LEED AP  
Vice President  
GEI Consultants, Inc.  
400 Unicorn Park Drive  
Woburn, MA 01801  
781-721-4012  
LSP License No. 9719

**Person who will own, operate, and/or maintain the selected Remedial Action Alternative (RAA):**

Tim Cosgrave  
Senior Manager, EHS  
UniFirst Corporation  
68 Jonspin Road  
Wilmington, MA 01887  
978-658-8888



## 1.2 Background

In 2002, a release of chlorinated volatile organic compounds (VOCs) (particularly tetrachloroethylene [also known as perchloroethylene (PCE)], trichloroethylene [TCE], and 1,1,1-trichloroethane [TCA]) to soil and groundwater at the Property was reported to the MassDEP and assigned RTN 3-23246. Three other RTNs were subsequently issued for the Site: 3-24358, 3-24376, and 3-26114. For tracking and reporting purposes, these RTNs have been consolidated under RTN 3-23246.

The detection of chlorinated VOCs in indoor air at some buildings within the Site required the implementation of an Immediate Response Action (IRA). The "Immediate Response Action Plan" associated with RTN 3-23246 was submitted to MassDEP on January 9, 2006. The Site is currently classified Tier IC (Permit No. W085813). The "Phase II Comprehensive Site Assessment, Method 3 Risk Characterization, and Phase III Remedial Action Plan" (Phase II/III) for the Site was submitted to MassDEP on July 14, 2008. The "Phase IV Remedy Implementation Plan" (Phase IV RIP) was submitted to MassDEP on August 10, 2009. The "Immediate Response Action Completion Report and Remedial Monitoring Report No. 11" (IRAC Report) was submitted to MassDEP on November 13, 2009, and the "Immediate Response Action Completion Report Amendment" (IRAC Report Amendment) was submitted to MassDEP on April 1, 2011. The "Phase IV Final Inspection Report, Remedial Monitoring Report No. 15, and Phase V Remedy Operation Status Report," (Phase IV FIR/Phase V ROS) was submitted to MassDEP on August 4, 2011.

The Phase II/Phase III identified the following areas of the Site requiring investigation and mitigation:

- The Property;
- The Capuano Center;
- 60 Tufts Street, a 17-unit condominium building north of the Property; and
- Certain residences and commercial buildings located in the vicinity of the Property.

The Remedial Action Alternative (RAA) selected by the Phase III was:

1. Installing Exposure Pathway Elimination Measures (EPEMs) to the extent feasible (e.g. vapor barrier and venting system, or sub-slab depressurization systems [SSDSs]), and recording Activity and Use Limitations (AULs) as appropriate, for residences where the soil vapor migration pathway to indoor air has been confirmed, and installing EPEMs in occupied commercial buildings to reduce chlorinated VOC concentrations in indoor air to that which constitutes a condition of No Significant Risk (NSR).



2. Continuing to operate the soil vapor extraction (SVE) system at the Property to remove compounds of potential concern (COPCs) from the vadose zone.
3. Conducting a Site-wide Monitored Natural Attenuation (MNA) program to evaluate overburden and bedrock groundwater plume concentrations over time to assess the rate of natural attenuation processes, and to confirm that groundwater concentrations of chlorinated VOCs are generally stable or decreasing.

As part of the IRA, while Site conditions were still under investigation, GEI took timely action to evaluate and implement measures to eliminate or mitigate Critical Exposure Pathways (CEPs) to the extent feasible. The feasibility of such measures was determined by physical conditions, including the suitability of each property to installation of active or passive vapor controls, and by amenability of property owners to provide legal access. Mitigative measures were initially implemented as IRA activities. The Phase II/Phase III assessment and evaluation of RAAs included response actions to address CEPs as part of the recommended Comprehensive Response Actions (CRAs). With the submittal of the Phase IV RIP, the IRA addressing CEPs was closed with an IRAC Report and IRAC Report Amendment, in accordance with the Massachusetts Contingency Plan (MCP), particularly 310 CMR 40.0427. Following the submittal of the IRAC Report and IRAC Report Amendment, all further response actions were continued under Phase IV and Phase V.

The CRA for the Site includes continued active operation and maintenance of the existing commercial and residential EPEMs, and the SSDS and SVE system at the Property, for the purpose of achieving a Permanent Solution pursuant to 310 CMR 40.0890. It is GEI's opinion that the Site meets the requirements for ROS in accordance with the MCP (310 CMR 40.0893[2]):

- The Phase III RAP was completed on July 14, 2008. The Phase IV RIP was completed on August 10, 2009.
- A final inspection has been performed and confirmed that the CRA has been constructed and implemented in accordance with the Phase IV RIP and is meeting projected design standards to achieve a Permanent Solution.
- The Phase II/Phase III demonstrated that each source of oil and/or hazardous material (OHM) is controlled at the Site. Residual dense non-aqueous phase liquid (DNAPL) is not migrating, and the dissolved-phase groundwater plumes are stable and are not causing an increase in concentrations of VOCs in groundwater, soil, soil vapor, or indoor air.
- Any substantial hazards have been eliminated as documented in the Substantial Hazard Evaluation (SHE) completed by ARCADIS U.S., Inc. (ARCADIS) of Chelmsford, Massachusetts in August 2011.



Construction and implementation of the CRA have been completed; additional activities, such as operation and monitoring of active remedial systems, will be conducted under Phase V. The Site will operate in ROS until a Permanent Solution is achieved, except for any portions of the Site that may be closed under Response Action Outcome Partial (RAO-P) Statements. Operating the SSDS and SVE systems, together with MNA, will ultimately achieve a Permanent Solution for the Site.

GEI has completed post-installation indoor air sampling at each installed EPDM to evaluate system effectiveness. GEI will continue to conduct annual operation, maintenance, and/or monitoring (OMM) activities, but not repeat indoor air testing, to confirm continued system effectiveness. GEI will perform indoor air testing at any newly installed EPDMs to confirm system effectiveness. GEI also conducts groundwater sampling and analysis as part of the MNA program.

### **1.3 Purpose and Scope**

The Site entered Phase V with the submittal of the Phase IV FIR/Phase V ROS on August 4, 2011. In accordance with the MCP (310 CMR 40.0892), this Phase V Status Report No. 5 and RMR No. 20 includes the following information regarding the remedial actions being conducted at the Site:

- A description of the type and frequency of OMM activities.
- A description of any significant modifications made to the OMM activities since the last reporting period.
- An evaluation of the performance of the remedial action during the reporting period, including whether the remedial action is achieving remedial goals specified in the Phase IV RIP as described in 310 CMR 40.0874(3), and a description of any conditions or problems noted during the reporting period that are or may be affecting the performance of the remedial action.
- A description of the measures taken to correct any conditions or problems that may have been encountered during the reporting period.

This report covers the period from June 16 through December 15, 2013. Details of the engineering concepts, design criteria, construction plans, and specifications were previously provided to MassDEP as part of the Phase IV RIP, IRA Status Reports, RMRs, and IRA Plan Modifications and are not revisited in this report.

### **1.4 Public Involvement (310 CMR 40.1400)**

UniFirst and GEI conducted a series of community meetings to inform property owners, residents, and City of Somerville (the City) officials about the Site. GEI will provide copies





of this Phase V Status Report No. 5 and RMR No. 20 to the local public document repositories that were established for the Site at the Somerville Central Public Library and at the City of Somerville Clerk's Office. GEI will also provide an electronic version of this report to the City for posting to the City's web site.

This report was submitted through eDEP (Transaction No. 627682) on February 10, 2014. A copy of the eDEP Transmittal Form (BWSC-108) is provided in Appendix A.

Copies of property owner notification letters, including notice of sampling letters, chemical testing results letters, and other miscellaneous correspondence sent during the reporting period, are in Appendix B.



## **2. Data Collection**

---

### **2.1 Groundwater Sampling**

GEI conducted semi-annual groundwater sampling at four monitoring wells in November 2013. Sampling was conducted at MW112A, MW118D, MW121D, and MW122 to monitor groundwater concentrations at those locations. A summary of all GEI groundwater sampling activities at the Site, including dates of sampling during this reporting period, is in Table 2-1.

Based on the historic groundwater sampling conducted since 2006, the nature and extent of groundwater contamination at the Site has been well-characterized. In addition, groundwater analytical results are incorporated into the MNA program to support the plume stability monitoring and natural attenuation evaluation, as discussed in Section 7. Based on an analysis of the Mann-Kendall statistical trend test results, which incorporates the additional groundwater testing data, the PCE, TCE, and TCA groundwater plumes continue to be stable or are slightly decreasing at the Site.

Groundwater testing results are summarized in Table 2-2, along with groundwater data from previous investigations. Monitoring well locations and the monitoring wells sampled during this reporting period are displayed in Fig. 2-1. The laboratory data reports associated with the November 2013 groundwater testing are in Appendix C.

### **2.2 Indoor Air Sampling**

Between January 2006 and December 15, 2013, GEI collected indoor air samples at 72 residences and commercial buildings. Fig. 2-2 shows buildings where GEI conducted indoor air sampling. The procedure for collecting indoor air samples was presented in IRA Status Report No. 3. Samples are typically collected from the basement and first floor of each building.

Between June 16 and December 15, 2013, GEI did not perform any additional indoor air sampling.



## **3. Capuano Center Phase IV Activities**

---

### **3.1 Background**

The remedial system at the Capuano Center is an SSDS with 18 sub-slab extraction points in six classrooms of the east wing. The interior slab/exterior wall joints of the six classrooms were sealed with a flexible epoxy sealant and extraction points were installed horizontally through the exterior wall. The extraction points are attached to three collection headers in exterior underground trenches and are operated by a 1.5-horsepower regenerative blower with pressure gauges, controls, and particulate filter housed in a garden-style shed. A discharge pipe extends from the blower shed to above the roofline of the Capuano Center. GEI began operating the SSDS on February 1, 2007.

The system does not include off-gas treatment. Based upon the measured flow rate and VOC concentrations, the annual discharge rate of VOCs from the system has been significantly less than 100 lbs per year; therefore, no off-gas treatment is required per MassDEP Policy No. WSC-94-150: "Off-gas Treatment of Point-Source Remedial Air Emissions," dated 1994.

### **3.2 Remedial Objectives**

The design objectives of the Capuano Center remedial system were to:

- Eliminate or mitigate, to the extent feasible, the potential soil vapor migration pathway to indoor air.
- Achieve a condition of NSR for occupants of the Capuano Center.

The SSDS monitoring data show that the sub-slab vacuum field generated by the SSDS influences the southern portion of the east wing. In conjunction with the physical sealing of the slab/wall joint, this indicates the soil vapor migration pathway to indoor air is controlled by the system.

### **3.3 Inspection and Monitoring**

The system has been monitored in accordance with the requirements and schedule in the Phase IV RIP, and in accordance with the requirements and schedule presented in subsequent Phase IV Status Reports, and the Phase IV FIR/Phase V ROS.

Monitoring of system parameters at the headers (flow rate, vacuum, and photoionization detector [PID] readings) is conducted every month, while vacuum and PID readings at indoor



and outdoor monitoring points are collected quarterly. Inspection and monitoring at the Capuano Center was performed six times from June to November 2013. A summary of monitoring activities conducted during this reporting period is provided in Table 3-1 and the Field Monitoring Forms are provided in Appendix D.

### **3.4 Performance Efficiency and Effectiveness**

The SSDS monitoring data show that the sub-slab vacuum field generated by the SSDS influences the southern portion of the east wing. In conjunction with the physical sealing of the slab/wall joint, this indicates the soil vapor migration pathway to indoor air is controlled by the system. GEI has completed 23 rounds of indoor air sampling in the Capuano Center. The results of each round of sampling show that the system is meeting remedial design objectives (Table 3-2). Based on the indoor air testing results, the soil vapor migration pathway to indoor air has been eliminated and a condition of NSR has been achieved for occupants of the Capuano Center. GEI has discontinued indoor air sampling and will rely on monitoring of operating parameters for the system to confirm continued effectiveness.

### **3.5 Management of Waste Materials**

Infrequently, condensate in system piping may accumulate in the subsurface collection header pipes, the cleanout drain for the header pipes, or the moisture separator installed as part of the blower assembly. If observed, SSDS condensate is drained from the moisture separator or pumped from the headers into the cleanout, which drains into the subsurface at the property.

### **3.6 System Modifications**

No modifications were made to the system during the reporting period.

In August and October 2013, GEI performed pilot testing of the SSDS to evaluate replacing the current blower setup with one or more radon fans. Reconfiguration of the SSDS would reduce the complexity of the system and simplify system maintenance, while maintaining remedial objectives.

Pilot testing indicates that a system modification with three radon fans installed on three dedicated ventilation pipes will provide similar or slightly improved sub-slab vacuum throughout the target zone. GEI is currently communicating with the Capuano Center to identify an SSDS layout that achieves the performance objectives and blends with the existing building architecture.





### **3.7 Future Phase V Activities**

Based on indoor air testing results, a condition of NSR has been achieved for occupants of the Capuano Center and the system is achieving the remedial design objectives. GEI will continue to monitor operational parameters and sub-slab conditions for the system (e.g., flow rate, vacuum) on a monthly basis, and collect readings from all indoor and outdoor monitoring points quarterly, to confirm ongoing system performance. During monitoring events, GEI will also perform maintenance tasks, which may include documenting whether the blower is operating normally and if alarm conditions are present, draining accumulated water from the moisture separator or collection headers, changing the filter element for the blower, changing the batteries in the auto-dialer, and correcting any deficiencies observed during routine inspection of system components.

Pending communications with the Capuano Center, GEI may initiate system modifications in spring 2014. An update on any system modification activities will be presented in the next status report.



## 4. Residential and Commercial Properties Phase IV Activities

---

### 4.1 EPEM Installation

Through December 15, 2013, EPEMs had been installed at 20 residential and commercial properties. EPEMs were also installed at 50 Tufts Street, 60 Tufts Street, and the Capuano Center. The EPEMs at 50 Tufts Street, 60 Tufts Street, and the Capuano Center are discussed separately in this report.

Between June 16 and December 15, 2013, no new EPEMs were installed. No EPEM modifications were performed. Fig. 4-1 shows the buildings with EPEMs installed. Table 4-1 presents the as-built design information for each installed EPEM.

Prior to installing EPEMs in residences, GEI installed indoor air purifiers with activated carbon filters as a mitigation measure. At residences where the concentrations of chlorinated VOCs constituted a condition of NSR, UniFirst left the air purifiers, effectively giving them to the property owners.

The EPEM designs are categorized as Option 1, Option 2, or Option 3, as conceptually defined below:

- Option 1 – SSDS: This option includes the installation of one or more sub-slab vapor extraction points and a collection piping network connected to an electric fan located outside the building envelope. The fan is equipped with a condensate bypass drain and the fan exhaust is discharged above the eave line of the roof. To date, no SSDSs (except for the system at the Property) require off-gas treatment. This option is installed in buildings with adequate sub-slab air flow and a competent concrete slab, or those properties where vapor barrier and venting systems are infeasible.
- Option 2 – Vapor Trench: The vapor trench option consists of a sub-slab venting system installed in a shallow trench around the interior basement perimeter, cement stucco applied to the walls, and an epoxy vapor barrier applied to the slab and stucco walls. The trench is backfilled with crushed stone and finished with approximately three inches of new concrete to meet the existing slab surface. This option is installed in buildings with poor sub-slab air flow, a competent concrete slab, and a fieldstone and/or brick foundation. Sub-slab vapors are vented through a piping network that exits the building envelope at the sill elevation and terminates above the eave line of the roof.



- Option 3 – New Slab: The new slab installation option consists of installing a new concrete slab, a sub-slab vapor barrier, and a floor venting system; applying cement stucco to the walls; and applying an epoxy vapor barrier to the new slab and stucco walls. This option is installed in buildings with poor sub-slab air flow, an incompetent concrete slab, and a fieldstone and/or brick foundation. As with Option 2, sub-slab vapors are vented through a piping network that exits the building envelope at the sill elevation and terminates above the eave line of the roof.

The decision-making process for selecting a conceptual design based on Site-specific conditions is illustrated in Fig. 4-2. Table 4-1 identifies the design option for each EPEM currently installed and the primary engineering components of each.

#### **4.1.1 Remedial Objectives**

The design objectives of the EPEMs were to:

- Eliminate or mitigate, to the extent feasible, the potential soil vapor migration pathway to indoor air in residential buildings.
- Achieve a condition of NSR for occupants of the residence or commercial building.

#### **4.2 Option 1 EPEMs**

Option 1 EPEMs consist of active sub-slab depressurization achieved by the installation of a radon fan and associated network of piping. Several of the Option 1 EPEMs were originally installed as Option 2 or Option 3 EPEMs; however, the concentrations of PCE measured in the post-installation indoor air did not constitute a condition of NSR, and a fan was installed. Option 1 EPEMs have been installed at the following 10 properties:

- 35-37 Knowlton Street (originally Option 3)
- 31-33 Knowlton Street
- 13 Morton Street
- 18 Morton Street
- 23 Tufts Street
- 103 Washington Street
- 95 Franklin Street (originally Option 2)
- 9 Knowlton Street
- 13 Knowlton Street
- 27 Tufts Street (originally Option 3)

Because these properties require active remediation, they remain in Phase V ROS.



### **4.2.1 Operation and Monitoring**

To confirm the performance of an EPEM, indoor air samples are collected shortly after installation is complete. For Option 1 EPEMs, following the post-installation indoor air sampling, indoor air samples are collected one time per winter for two consecutive years. Inspection and monitoring also includes measuring VOCs at sub-slab sampling points with a PID, collecting pressure measurements using a manometer, and inspecting system components. If needed, repairs or modifications will be scheduled.

No OMM activities or indoor air sampling were performed for Option 1 EPEMs during this reporting period.

In June 2013, UniFirst's contractor attempted to install a dedicated electric meter for the SSDS fans at 103 Washington Street. The property is occupied by an automotive repair garage. During this visit, the tenant of the auto repair garage denied permission to install the electric meter, and also indicated to GEI staff that he de-activated the SSDS fans at that property. GEI requested that the tenant re-activate the fans, but the tenant refused. GEI reached out to the owner of 103 Washington Street to request assistance in re-activating the fans, but the owner asked that we speak directly with the tenant. GEI made several phone calls attempting to re-establish communications with the tenant, but the tenant was unresponsive. On January 31, 2014, GEI visited 103 Washington Street and the tenant agreed to continue the electric meter installation process. During this visit, the tenant also expressed safety concerns with the existing fans, and agreed to re-activate the fans pending a safety evaluation. GEI will continue communications with the tenant at 103 Washington Street to re-activate the fans and install the electric meter during winter 2014.

On July 30, 2013, UniFirst identified possible performance issues with the fan located at 31-33 Knowlton Street based on variations in the electricity bill for the electric meter dedicated to the SSDS. GEI visited the exterior of the building on August 1, 2013 and confirmed the fan was not operating. GEI contacted the owners to inform them of the shut down and to coordinate access for UniFirst's contractor to remove and evaluate the fan and inspect the interior electrical panel. Upon vendor inspection of the fan, evidence of soil within the fan housing was identified indicating there may have been a high vacuum condition that pulled soil/water into the system piping. GEI received a replacement fan from the vendor in early November 2013 and coordinated access with the owner to install the fan. Access was granted and the fan was replaced on November 25, 2013. The fan is currently operating. GEI will continue to check fan performance during winter 2014.

### **4.2.2 Efficiency and Effectiveness**

For residential buildings, the primary goals for EPEM performance are the reduction of chlorinated VOC concentrations in indoor air to below laboratory reporting limits to the





extent feasible, and to achieve a condition of NSR. For commercial buildings, the standard for successful EPEM performance is the reduction of chlorinated VOC concentrations in indoor air to that which constitutes a condition of NSR.

Through December 15, 2013, the results of post-EPEM installation indoor air sampling, inspection, and monitoring indicate that each of the Option 1 EPEMs installed or activated at residential and commercial properties has achieved the remedial objectives.

#### **4.2.3 System Maintenance and Modifications**

No system maintenance or modification was performed on existing Option 1 EPEMs during this reporting period.

#### **4.2.4 Management of Waste Materials**

No waste materials associated with Option 1 EPEMs were generated during the reporting period.

### **4.3 Option 2 and 3 EPEMs**

Option 2 and 3 EPEMs consist of passive vapor barriers and do not require mechanical operation or maintenance. Option 2 or 3 EPEMs have been installed at the following 10 properties:

- 95R Franklin Street (Option 2)
- 12 Morton Street (Option 3)
- 11 Morton Street (Option 2)
- 4 Morton Street (Option 3)
- 10 Morton Street (Option 3)
- 91-93 Franklin Street (Option 3)
- 17 Knowlton Street (Option 3)
- 32 Knowlton Street (Option 3)
- 19-19A Morton Street (Option 3)
- 166-168 Glen Street (Option 3)

In accordance with the MCP (310 CMR 40.1000), regulatory closure has been achieved with a Class A-3 RAO-P for several properties with an Option 2 or 3 EPEM. The properties that have achieved a Class A-3 RAO-P are presented in Fig. 4-3.



### **4.3.1 Operation and Monitoring**

To confirm the performance of an EPDM, indoor air samples are collected shortly after installation is complete. For Option 2 and 3 EPDMs, following the post-installation indoor air sampling, indoor air samples are collected two times per year (including one winter sample) for two consecutive years. The samples are analyzed for Site-specific chlorinated VOCs. During indoor air sampling and annual inspections, the condition of the EPDM will be inspected and, if needed, repairs or modifications will be scheduled.

No OMM activities or indoor air sampling were performed for Option 2 and 3 EPDMs during this reporting period.

### **4.3.2 Efficiency and Effectiveness**

For residential buildings, the primary goals for EPDM performance are the reduction of chlorinated VOC concentrations in indoor air to below laboratory reporting limits to the extent feasible, and to achieve a condition of NSR. For commercial buildings, the standard for successful EPDM performance is the reduction of chlorinated VOC concentrations in indoor air to that which constitutes a condition of NSR.

Through December 15, 2013, the results of post-EPDM installation indoor air sampling and system monitoring indicate that each of the 10 Option 2 or 3 EPDMs currently installed at residential properties has achieved the remedial objectives.

### **4.3.3 System Maintenance and Modifications**

No system maintenance or modification was performed on existing Option 2 or 3 EPDMs during this reporting period.

### **4.3.4 Management of Waste Materials**

No waste materials associated with Option 2 or 3 EPDMs were generated during the reporting period.

## **4.4 Activity and Use Limitations**

It is anticipated that AULs will be recorded for each property where an Option 2 or 3 EPDM is installed and for some of the properties where an Option 1 EPDM is installed. No AULs were recorded during this reporting period.



## 4.5 Response Action Outcomes

An evaluation of the MNA program indicates that the groundwater plumes are stable, overall groundwater concentrations of chlorinated VOCs are not increasing, and natural attenuation processes are occurring at the Site which will likely reduce contaminant concentrations in groundwater over time. Accordingly, the source of contamination at the Site has been controlled.

The Method 3 Risk Characterizations prepared for the Site have demonstrated that a condition of NSR exists at individual properties at the Site, with the exception of 9, 17, and 19 Tufts Street and 105-107 Washington Street. Owners of these properties have denied GEI access to enter their residences and install an EPEM, despite numerous oral and written requests from both GEI and MassDEP. Therefore, implementation of remedial systems to achieve a condition of NSR on these properties is infeasible.

Based on a demonstration of source control at the Site, and a condition of NSR at individual properties, many of the individual properties are eligible for an RAO-P Statement in accordance with the MCP (310 CMR 40.1000). The filing of an RAO-P Statement for an individual property documents the achievement of regulatory closure under the MCP. Therefore, the Phase V provisions do not apply to properties for which an RAO-P Statement has been submitted. The properties that have achieved RAO-P status are shown on Fig. 4-3. A summary of the different classes of RAO-P Statements to be submitted in the future for properties at the Site, depending on the property-specific conditions and the type of mitigation, if any, is discussed below.

Active operation and maintenance is required for Option 1 EPEMs. Therefore, absent enabling amendments to the MCP, an RAO-P Statement will not be filed for properties with an Option 1 EPEM, and OMM of the Option 1 EPEMs will continue under ROS. GEI may re-evaluate procedural options for submitting RAO-P statements for Option 1 EPEMs once MassDEP has completed its process for promulgating amendments to the MCP.

### 4.5.1 *Class A-3 RAO-P*

GEI will attempt to record an AUL at each property with an Option 2 or 3 EPEM to maintain the integrity of the EPEM. After an AUL is recorded, GEI will prepare a Class A-3 RAO-P Statement for residential properties with Option 2 or Option 3 EPEMs where 2 years of post-installation indoor air samples have demonstrated that the EPEM is effective. Following the post-installation indoor air sampling, GEI will continue annual inspections of Option 2 and 3 EPEMs as provided for in the Phase IV RIP. The properties that have achieved a Class A-3 RAO-P are shown in Fig. 4-3. If a property owner does not sign the AUL, inspections will continue as Phase V activities.



## **4.5.2 Class B-1 RAO-P**

GEI will prepare a Class B-1 RAO-P Statement for residences where multiple lines of evidence have demonstrated the absence of a soil vapor migration pathway to indoor air and an EPEM is not required. GEI will also prepare Class B-1 RAO-Ps for residences where a Method 3 Risk Characterization, based on multiple rounds of sampling, indicated that concentrations of chlorinated VOCs in indoor air constitute NSR, and the feasibility evaluation demonstrated that installation of an EPEM was infeasible. In addition, GEI will prepare a Class B-1 RAO-P for the portion of the Site occupied by public right-of-ways. The properties that have achieved a Class B-1 RAO-P are shown in Fig. 4-3. During this reporting period, GEI submitted RAO-P Statements for 32 and 66-66A Franklin Avenue, and 81-83 Washington Street.

## **4.6 Future Phase V Activities**

### **4.6.1 EPEM Operation and Monitoring**

The results of post-EPEM installation indoor air sampling, inspection, and monitoring indicates that each of the Option 1, 2, or 3 EPEMs currently installed have achieved the remedial objectives. GEI has completed sufficient indoor air testing for each installed EPEM. GEI will continue to conduct annual OMM activities, but not repeat indoor air testing, at properties where an EPEM has been installed to confirm it is achieving the remedial design objectives.

### **4.6.2 EPEM Modifications**

No EPEM modifications are anticipated during the next reporting period.

GEI will continue communications with the tenant of 103 Washington Street and attempt to re-activate the SSDS fans and install a separate electric meter.

### **4.6.3 Installation of New EPEMs**

GEI is providing environmental oversight in connection with construction of a two-family residential building at 34 Knowlton Street. GEI submitted a Release Abatement Measure (RAM) Plan on behalf of the building developer on December 4, 2013. Response actions in the RAM include construction and testing of a vapor barrier and installation of sub-slab ventilation piping beneath the building. Building construction is expected to be completed in spring 2014. Following completion of building construction, GEI will perform confirmatory indoor air testing to demonstrate that the vapor intrusion mitigation measures are effective, and confirm that compounds of concern (COCs) are not present in indoor air at concentrations that would pose significant risk to future building occupants.





The EPEM will initially be evaluated as an Option 3 EPEM. If confirmatory indoor air testing suggests that an Option 1 EPEM is required, a fan will be added to the system.

#### **4.6.4 AULs and RAOs**

As discussed in Section 4.6, the source of contamination at the Site has been controlled. If 2 years of post-installation indoor air sampling at a property demonstrate that an EPEM continues to achieve the remedial objectives, and that EPEM does not include active remedial measures, then that property is eligible for a Class A-3 RAO-P Statement.

GEI anticipates recording AULs for each property where an Option 2 or 3 EPEM is installed and for some of the properties where an Option 1 EPEM is installed.

Once the AULs are recorded, GEI will prepare a Class A-3 RAO-P for the properties with Option 2 or 3 EPEMs. Absent enabling amendments to the MCP, properties with an Option 1 EPEM will be in ROS. As discussed in Section 4.6.2, GEI will prepare Class B-1 RAO-Ps for those properties that did not require mitigation.



## **5. 60 Tufts Street**

---

### **5.1 Background**

60 Tufts Street is a 17-unit condominium building adjacent to the Property. The remedial system at 60 Tufts Street was designed and constructed as an SSDS. The SSDS includes 12 vertical sub-slab extraction points and 2 horizontal foundation wall extraction points connected to 2 collection headers and a 5-horsepower regenerative blower with pressure gauges, controls, and particulate filter housed in a locked metal enclosure. GEI began operation of the SSDS on April 24, 2009. A discharge pipe extends from the blower through a parking garage deck and discharges above the roofline of the building.

The system does not include off-gas treatment. Based upon the measured flow rate and VOC concentrations, the annual discharge rate of VOCs from the system will be significantly less than 100 lbs per year; therefore, no off-gas treatment is required per MassDEP Policy No. WSC-94-150.

### **5.2 Remedial Objectives**

The objectives of the SSDS at 60 Tufts Street are to:

- Eliminate or mitigate, to the extent feasible, the potential soil vapor migration pathway to indoor air.
- Achieve a condition of NSR for occupants of the condominium building.

### **5.3 Inspection and Monitoring**

The system has been monitored in accordance with the requirements and schedule in the Phase IV RIP. Operational parameters for the system (e.g., flow rate, vacuum) are monitored monthly and indoor air quality in Units 1, 4, and 5 and sub-slab conditions were monitored for 2 years following installation of the EPDM. The Phase IV RIP provides for ongoing annual indoor air sampling. However, post-EPDM indoor air sampling and visual inspections have confirmed that the EPDM at 60 Tufts Street has been constructed in accordance with the Phase IV RIP, and has achieved the remedial design objectives. Accordingly, GEI will not conduct additional indoor air testing, but will continue to monitor operational parameters of the system. A summary of monitoring activities conducted during this reporting period is provided in Table 5-1 and Field Monitoring Forms are provided in Appendix D.



There was one unscheduled shutdown of the system during this reporting period. On December 12, 2013, there was a brief power outage in the area. The system was off for approximately 4 hours.

## **5.4 Performance Efficiency and Effectiveness**

The SSDS monitoring data show that the sub-slab vacuum field generated by the SSDS influences nearly the entire floor slab area. Indoor air samples have been collected in Units 1, 4, and 5, which are the units closest to the ground floor, for 2 years since EPEM installation. The indoor air testing results indicate that a condition of NSR has been achieved for building occupants at 60 Tufts Street and the soil vapor migration pathway to indoor air has been mitigated to the extent feasible.

## **5.5 Management of Waste Materials**

Infrequently, condensate in system piping may accumulate in the cleanout drains for the sub-surface header pipes, or in the moisture separator installed as part of the blower assembly. If observed, the liquid will be drained and dispensed to the bare ground surface at 60 Tufts Street so that it can infiltrate into the subsurface within the Site boundary.

## **5.6 System Modifications**

No modifications were made to the system during the last reporting period.

## **5.7 Future Phase V Activities**

The system is achieving the remedial design objectives and OMM activities will continue. To confirm system performance, GEI will continue to monitor operational parameters and sub-slab conditions for the system (e.g., flow rate, vacuum) on a monthly basis. During monthly monitoring events, GEI will also perform maintenance tasks which may include documenting that the blower is in operation, draining accumulated water from the moisture separator or collection headers, changing the filter element for the blower, changing the batteries in the auto-dialer, and correcting any deficiencies observed during routine inspection of system components.



## **6. 50 Tufts Street Property**

---

### **6.1 Background**

The remedial system at the Property was originally designed and constructed as an SSDS that includes 22 sub-slab extraction points inside the building, a 15-horsepower regenerative blower with pressure gauges, controls, and particulate filter, and three 2,000-lb activated carbon adsorbers operated in series for off-gas treatment. As part of the SSDS installation, the building slab was sealed to minimize vapor transmission through the slab. The cracks and joints in the building slab were filled with flexible sealant and a two-part epoxy coating was applied to the surface of the slab. GEI began operating the SSDS on April 30, 2007.

In July and August 2007, SVE components were added to the system as part of the CRA to address residual VOCs in soil. The SVE system includes seven SVE points installed below the pavement in the north and south parking lots on the Property. The SSDS and the SVE system rely upon shared equipment, including the piping manifold, blower assembly, and off-gas treatment units. GEI began operating the SVE system on August 22, 2007.

### **6.2 Remedial Objectives**

The design objectives of the combined SSDS/SVE system were to:

- Eliminate or mitigate, to the extent feasible, the soil vapor migration pathway to indoor air.
- Achieve a condition of NSR for a commercial full-time worker.
- Reduce the mass of contaminants in the vadose zone.
- Control the potential migration of soil vapor from the Property to the 60 Tufts Street property.

### **6.3 Inspection and Monitoring**

The system has been monitored in accordance with the requirements and schedule in the Phase IV RIP. Operational parameters for the system (e.g., flow rate, vacuum, off-gas treatment efficiency) are monitored monthly. GEI also measures the vapor pressure of sub-slab extraction points and monitoring points periodically. GEI uses these sub-slab pressure measurements to confirm system effectiveness. The pipe and hose connections on the pressure side of the blower are examined during monitoring visits for potential leaks. Leaks, if encountered, are corrected immediately. Carbon change-outs are scheduled based on carbon tank monitoring data in order to maximize VOC adsorption while maintaining





compliance with regulatory requirements regarding discharge of VOCs to the atmosphere. Procedures to address potential spills of spent activated carbon during carbon change-outs have been developed and are presented in the system OMM Plan provided in the Phase IV RIP.

Monthly monitoring on May 16, 2013 indicated that the system was achieving at least 95% removal, the objective for off-gas treatment efficiency. The June 21, 2013 monthly monitoring results suggested that the system may not have been achieving 95% removal, but, as explained below, there is reason to question such a result.

On June 21, 2013 the photoionization detector (PID) reading for the influent was 9.7 parts per million (ppm), the off-gas reading from the lead carbon tank was 2.2 ppm, and the off-gas reading from the secondary carbon tank was 3.9 ppm (where system effluent emits to the atmosphere). On July 31, 2013 the PID reading for the influent was 19.0 ppm, the off-gas reading from the lead carbon tank was 3.2 ppm, and the off-gas reading from the secondary carbon tank was 13.2 ppm. The accuracy of the PID readings for each of these rounds is uncertain. It is unlikely that the concentration of the off gas from the secondary tank would be higher than the lead tank. Based on the system design and mass loading principals, the secondary carbon tank should not be emitting higher concentrations than the lead carbon tank. This phenomenon could occur if the carbon in the secondary tank was saturated and desorption of VOCs was occurring, but this is very unlikely since the breakthrough of VOCs through activated carbon is typically a gradual process. The monthly monitoring for April, May, June, and July 2013 indicated 96.5%, 100%, 59.7%, and 31% removal, respectively. Breakthrough should not be this significant over such a short period of time and effluent concentrations in the secondary tank should not be higher than the lead tank; therefore, it is likely that the PID readings were inaccurate. We have experienced PID interference at this Site and other sites attributable to humidity during past monitoring rounds, especially during humid summer months. The appearance of inadequate removal is more likely due to anomalous PID readings than a saturated carbon tank. The system has been operating generally under the same conditions for over 6 years, and monthly monitoring has demonstrated that the system has routinely achieved greater than 95% removal.

GEI ordered a carbon change on June 24, 2013. The vendor informed us that the 4 millimeter (mm) pelletized carbon typically used in the system was not in stock. We identified an alternative 4 x 8 mesh granulated carbon as a suitable alternative. Delivery of replacement carbon typically occurs within 2 to 3 weeks of the order, but due to the change in carbon stock the change-out occurred on August 7, 2013. The system was shut down for approximately 3 hours during the carbon change-out. Subsequent monitoring rounds have demonstrated greater than 95% removal.

On October 8, 2013, damaged polyvinyl chloride (PVC) piping was observed during system inspection on two interior extraction points within the warehouse portion of the building.



The damage likely occurred during routine movement of storage items. UniFirst's contractor repaired the extraction points in October 2013.

A summary of monitoring activities during this reporting period is provided in Table 6-1, and Field Monitoring Forms are provided in Appendix D.

## **6.4 Performance Efficiency and Effectiveness**

The SSDS monitoring data show that the sub-slab vacuum field generated by the SSDS covers most of the building slab area. In conjunction with the physical sealing of the slab, this indicates the soil vapor migration pathway to indoor air is being mitigated by the system. Based on indoor air testing results collected since the combined system has been in operation, a condition of NSR for full-time commercial workers has been achieved for the building at the Property.

The SVE system monitoring data show that vacuum influence from the SVE points in the south parking lot extends approximately 30 feet south of the building and from the SVE points in the north parking lot extends onto 60 Tufts Street.

Three influent and two effluent samples from the carbon treatment system were collected and compared with PID field measurements to estimate the total mass of VOCs removed from soil vapor since April 30, 2007. Monitoring data from both the SSDS and SVE components through November 25, 2013 show that approximately 8,033 lbs (approximately 596 gallons) of VOCs have been removed from the vadose zone at the Property (Fig. 6-1).

## **6.5 Management of Waste Materials**

Infrequently, condensate in system piping may accumulate in the moisture separator installed as part of the blower assembly. If observed, the liquid is drained from the moisture separator and dispensed to the bare ground surface at the Property so that it can infiltrate into the subsurface within the Site boundary.

Based on the previous quantities of spent carbon generated by the system, a 2009 Hazardous Waste Report was submitted to MassDEP on March 1, 2010, identifying the Property as a Large Quantity Generator (LQG) facility. GEI operated the system as a LQG in 2013.

Remediation waste generated during this reporting period consisted of 5,850 lbs of spent activated carbon. The carbon change-out occurred on August 7, 2013 and the spent carbon was delivered to Rineco Chemical Industries, Inc. (Rineco) of Benton, Arkansas for use by cement kilns as a waste-derived fuel. Disposal documentation for this reporting period is in Appendix E.



## **6.6 System Modifications**

No modifications were made to the system during the last reporting period.

## **6.7 Future Phase V Activities**

The system is achieving the remedial design objectives. Phase V ROS OMM activities will continue in accordance with the requirements and schedule set forth in the Phase IV RIP.



## 7. Monitored Natural Attenuation

---

### 7.1 MNA Program Objectives

MNA is part of the remedial strategy to reach a Permanent Solution for the Site. GEI has implemented an MNA program to confirm on-going natural attenuation is occurring at the Site. The MNA program is described in the MNA OMM Plan presented in the Phase IV RIP. The primary elements of the MNA program include:

- Plume Stability Monitoring: A groundwater sampling plan to monitor overburden and bedrock groundwater plume concentrations through time to confirm that the groundwater plumes are stable, and that overall groundwater concentrations of chlorinated VOCs are not increasing.
- Natural Attenuation Evaluation: An evaluation of overburden and bedrock groundwater plume concentrations through time for indications of the presence and rate of natural attenuation processes.

### 7.2 MNA Activities

GEI conducted the following MNA activities during the reporting period:

- Groundwater Level Measurements: GEI measured groundwater levels at monitoring wells MW112A, MW118D, MW121D, and MW122, as shown in Table 7-1.
- Groundwater Sampling: GEI collected groundwater samples from monitoring wells MW112A, MW118D, MW121D, and MW122 in November 2013, and submitted them for chemical testing for VOCs by U.S. Environmental Protection Agency (EPA) Method 8260B. The sampling locations are shown in Fig. 2-1, the chemical testing results are shown in Table 2-2, and the laboratory data reports are in Appendix C.

GEI evaluated the groundwater chemical testing results collected during MNA activities to update and supplement the plume stability monitoring and natural attenuation evaluation. During this reporting period, semi-annual groundwater sampling was conducted at monitoring wells MW112A, MW118D, MW121D, and MW122.

Based on an analysis of the Mann-Kendall statistical trend test results, which incorporates the additional groundwater testing data, the PCE, TCE, and TCA groundwater plumes continue to be stable.

GEI has been monitoring concentration fluctuations in groundwater PCE concentrations in monitoring wells MW122 and MW112A, and TCE concentrations in monitoring wells





MW118D and MW121D. The concentrations decreased slightly in MW122, MW112A, and MW118D, and increased slightly in MW121D. These results are within a range of fluctuation that is consistent with continuing plume stability, particularly when considered in context with prior groundwater results from all monitoring wells. GEI will perform Site-wide groundwater sampling in spring 2014.



## **8. Remedial Monitoring Report No. 20**

---

Remedial Monitoring Report No. 20, documenting OMM activities for active remedial systems at the Site, is presented in the BWSC-108A and 108B Transmittal Forms in Appendix A.



## 9. References

---

- MassDEP (1994). "Off-gas Treatment of Point-Source Remedial Air Emissions," Massachusetts Department of Environmental Protection, Policy #WSC-94-150, dated 1994.
- GEI (2006). IRA Status Report No. 1, 50 Tufts Street, Somerville, MA, RTNs 3-23246, 3-24358 and 3-24376, dated May 8, 2006.
- GEI (2006). IRA Status Report No. 2 and Plan Modification No. 3, 50 Tufts Street, Somerville, MA, RTN 3-23246, dated November 13, 2006.
- GEI (2007). IRA Plan Modification No. 4, 50 Tufts Street, Somerville, MA, RTNs 3-23246 and 3-26114, dated February 22, 2007.
- GEI (2007). IRA Plan Modification No. 1, 50 Tufts Street, Somerville, MA, RTN 3-26114, dated April 12, 2007.
- GEI (2007). IRA Plan Modification No. 5, 50 Tufts Street, Somerville, MA, RTN 3-23246, dated May 5, 2007.
- GEI (2007). IRA Status Report No. 3, 50 Tufts Street, Somerville, MA, RTN 3-23246 & IRA Status Report No. 1 RTN 3-26114, dated May 10, 2007.
- GEI (2007). Remedial Monitoring Report No. 1, 50 Tufts Street, Somerville, MA, RTN 3-23246, dated August 30, 2007.
- GEI (2007). Monthly Remedial Monitoring Report No. 2, 50 Tufts Street, Somerville, MA, RTN 3-23246, dated August 30 2007.
- GEI (2007). Monthly Remedial Monitoring Report No. 3, 50 Tufts Street, Somerville, MA, RTN 3-23246, dated August 30, 2007.
- GEI (2007). Monthly Remedial Monitoring Report No. 4, 50 Tufts Street, Somerville, MA, RTN 3-23246, dated August 30, 2007.
- GEI (2007). IRA Plan Modification No. 7, 50 Tufts Street, Somerville, MA, RTN 3-23246, dated October 11, 2007.
- GEI (2007). IRA Plan Modification No. 8, 50 Tufts Street, Somerville, MA, RTN 3-23246, dated October 11, 2007.



- GEI (2007). Monthly Remedial Monitoring Report No. 5, 50 Tufts Street, Somerville, MA, RTN 3-23246, dated October 19, 2007.
- GEI (2007). Monthly Remedial Monitoring Report No. 6A, 50 Tufts Street, Somerville, MA, RTN 3-23246, dated October 31, 2007.
- GEI (2007). Monthly Remedial Monitoring Report No. 6B, 50 Tufts Street, Somerville, MA, RTN 3-23246, dated November 8, 2007.
- GEI (2007). Monthly Remedial Monitoring Report No. 7A, 50 Tufts Street, Somerville, MA, RTN 3-23246, dated November 8, 2007.
- GEI (2007). Monthly Remedial Monitoring Report No. 7B, 50 Tufts Street, Somerville, MA, RTN 3-23246, dated November 8, 2007.
- GEI (2007). IRA Status Report No. 4, 50 Tufts Street, Somerville, MA, RTN 3-23246, dated November 9, 2007.
- GEI (2008). IRA Status Report No. 5 and Remedial Monitoring Report (RMR) No. 8, 50 Tufts Street, Somerville, MA, RTN 3-23246, dated May 12, 2008.
- GEI (2008). Phase II Comprehensive Site Assessment (CSA), Method 3 Risk Characterization, and Phase III Remedial Action Plan (RAP), 50 Tufts Street, Somerville, MA, RTN 3-23246, dated July 14, 2008.
- GEI (2008). IRA Status Report No. 6 and Remedial Monitoring Report (RMR) No. 9, 50 Tufts Street, Somerville, MA, RTN 3-23246, dated November 10, 2008.
- GEI (2009). IRA Status Report No. 7 and Remedial Monitoring Report (RMR) No. 10, 50 Tufts Street, Somerville, MA, RTN 3-23246, dated May 11, 2009.
- GEI (2009). Phase IV Remedy Implementation Plan (RIP), 50 Tufts Street, Somerville, MA, RTN 3-23246, dated May 11, 2009.
- GEI (2009). IRA Completion Report and Remedial Monitoring Report (RMR) No. 11, 50 Tufts Street, Somerville, MA, RTN 3-23246, dated May 11, 2009.
- GEI (2010). Phase IV Status Report No. 1 and Remedial Monitoring Report No. 12, 50 Tufts Street, Somerville, MA, RTN 3-23246, dated February 8, 2009.
- GEI (2010). Phase IV Status Report No. 2 and Remedial Monitoring Report No. 13, 50 Tufts Street, Somerville, MA, RTN 3-23246, dated August 4, 2010.





- GEI (2011). Phase IV Status Report No. 3 and Remedial Monitoring Report No. 14, 50 Tufts Street, Somerville, MA, RTN 3-23246, dated February 11, 2011.
- GEI (2011). Immediate Response Action Completion Report Amendment, RTN 3-23246, 50 Tufts Street Site, Somerville, Massachusetts, dated April 1, 2011.
- GEI (2011). Phase IV Final Inspection Report, Remedial Monitoring Report No. 15, and Phase V Remedy Operation Status Report. 50 Tufts Street, Somerville, Massachusetts, dated August 4, 2011.
- GEI (2012). Phase V Status Report No. 1 and Remedial Monitoring Report No. 16, 50 Tufts Street, Somerville, MA, RTN 3-23246, dated February 10, 2012.
- GEI (2012). Phase V Status Report No. 2 and Remedial Monitoring Report No. 17, 50 Tufts Street, Somerville, MA, RTN 3-23246, dated August 4, 2012.
- GEI (2013). Phase V Status Report No. 3 and Remedial Monitoring Report No. 18, 50 Tufts Street, Somerville, MA, RTN 3-23246, dated February 8, 2013.
- GEI (2013). Phase V Status Report No. 4 and Remedial Monitoring Report No. 19, 50 Tufts Street, Somerville, MA, RTN 3-23246, dated August 2, 2013.





Geotechnical  
Environmental  
Water Resources  
Ecological





# Tables

---



**Table 2-1. Summary of Groundwater Sampling Activities**  
**Phase V Status Report No. 5 and Remedial Monitoring Report No. 20**  
 50 Tufts Street  
 Somerville, Massachusetts

Sampling Event and Date	Sampled Locations	QA/QC Samples
Quarterly Groundwater Sampling 5/23/2006 5/24/2006 5/25/2006	SH-MW1, SH-MW2, SH-MW3, GEO-1, GEO-2, MW-1, MW-GEO-3, GEO-4, GEO-5, GEO-6, MW101, MW102 MW103, SH-4	NA Field Duplicate of GEO-3 NA
Groundwater Sampling 8/7/2006	MW103	NA
Quarterly Groundwater Sampling 10/4/2006 10/5/2006	SH-MW1, SH-MW2, SH-MW3, GEO-3 GEO-4, GEO-5 and GEO-1, GEO-2, MW101, MW102, MW103, MW104 and	Field Duplicate MW900 (GEO-3) NA
Quarterly Groundwater Sampling 1/16/2007 1/17/2007 1/18/2007	SH-MW1, SH-MW2, GEO-3, GEO-4, GEO-5, GEO-6, SH-MW3, MW-1, MW-3, GEO-1 and GEO-2 MW103, MW106, MW107, MW108, MW109, MW110 and	Field Duplicate MW900 (GEO-6) Field Duplicate MW800 (GEO-1) NA
Groundwater Sampling 2/20/2007 3/23/2007	MW113 and MW114 MW112A, MW115R AND MW116	NA NA
Quarterly Groundwater Sampling 4/12/07 4/13/07 4/16/07 5/23/07	SHMW1, SHMW3, GEO1, GEO2 and MW113 GEO3, MW101, MW102, MW103, MW104, MW106, SHMW2, GEO4, GEO5, GEO6, MW105, MW108, MW109, MWCS1	NA Field Duplicate MW900 (MW101) Field Duplicate MW901 (GEO6) NA
Quarterly Groundwater Sampling 7/18/2007  7/19/2007 7/20/2007	MW102, MW107, MW108, MW11, MW112A, MW113, MW114, MW115R, M2116 and MW117S  SHMW2, MW104, MW105, MW106, MW117T, MW117D, MW118S, MW118T and MW118D	Sample from MW102 was used for MS/MSD Field Duplicate MW900 (MW113) Field Duplicate MW901 (MW116)  NA NA
Groundwater Sampling 8/22/07 8/30/07	MW119S, MW119T, MW120S and MW120D MW118S, MW118T and MW118D	NA NA
Quarterly Groundwater Sampling 10/10/2007 10/11/2007 10/12/2007 10/15/2007 10/22/2007	MW102, MW105, MW106, MW107, MW108, MW111, MW112A, MW113, MW114, MW115 MW117T, MW117D, MW118S, MW118T, MW118D MW116, MW119S, MW119T, MW120S, MW120D, MW201, MW104, MW117S MW121S, MW121D	Sample from MW102 was used for MS/MSD Field Duplicate MW900 (MW113) NA Field Duplicate MW901 (MW116) NA NA

**General Notes:**

1. NA = not applicable.
2. QA/QC = quality assurance/quality check.
3. MS/MSD = matrix spike/matrix spike duplicate.
4. VOC = volatile organic compound.
5. All groundwater samples submitted for VOC testing. Selected samples collected in January 2007, April 2010, April 2011, April 2012, and April 2013 were also submitted for natural attenuation parameter testing.





**Table 2-1. Summary of Groundwater Sampling Activities**  
**Phase V Status Report No. 5 and Remedial Monitoring Report No. 20**  
**50 Tufts Street**  
**Somerville, Massachusetts**

Sampling Event and Date	Sampled Locations	QA/QC Samples
Quarterly Groundwater Sampling 1/9/2008	MW105, MW115	NA
1/10/2008	MW102, MW106, MW107, MW108, MW111, MW112A	Sample from MW102 was used for MS/MSD
1/11/2008	MW104, MW113, MW114, MW116, MW117S, MW118S, MW201, MW202	Field Duplicate MW900 (MW113) Field Duplicate MW901 (MW116)
1/15/2008	MW117T, MW117D, MW118T, MW119S, MW120S,	NA
1/16/2008	MW118D, MW119T	NA
1/17/2008	MW120D	NA
Groundwater Sampling 1/30/2008	MW122	NA
Quarterly Groundwater Sampling 4/15/2008	GEO-1, SH-MW3, MW3, MW104, MW113, MW116, MW201, MW202, MW203	Field duplicate MW113 (MW900) Field duplicate MW116 (MW901)
4/16/2008	MW117S, MW117T, MW117D, MW118T, MW118D,	NA
4/17/2008	MW102, MW106, MW107, MW108, MW109, MW111, MW112A, MW114, MW115R, MW120D, MW121S, MW105	Sample from MW102 was used for MS/MSD
4/18/2008		NA
Quarterly Groundwater Sampling 7/14/2008	MW105, MW112A, MW121S, MW121D, MW122	Field duplicate MW112A (MW900) Field duplicate MW121D (MW901)
7/15/2008	GEO-1, GEO-2, MW-3, MW104, MW118S, MW118T, MW118D, MW119S, MW119T, MW120S, MW120D, MW116, MW117S, MW117T, MW117D, MW118D	Sample from MW104 was used for MS/MSD
7/16/2008		NA
Quarterly Groundwater Sampling 10/21/2008	MW104, GEO-1, GEO-2 MW116, MW117S, MW117T, MW117D, MW118S, MW118T, MW118D, MW202, MW-3	Sample from MW104 was used for MS/MSD
10/22/2008	MW105, MW112A, MW119S, MW119T, MW120S, MW120D, MW121S, MW121D, MW122	Field duplicate MW112A (MW901) Field duplicate MW121D (MW900)
Quarterly Groundwater Sampling 4/15/2008	GEO-1, SH-MW3, MW3, MW104, MW113, MW116, MW201, MW202, MW203	Field duplicate MW113 (MW900) Field duplicate MW116 (MW901)
4/16/2008	MW117S, MW117T, MW117D, MW118T, MW118D,	NA
4/17/2008	MW102, MW106, MW107, MW108, MW109, MW111, MW112A, MW114, MW115R, MW120D, MW121S, MW105	Sample from MW102 was used for MS/MSD
4/18/2008		NA
Quarterly Groundwater Sampling 7/14/2008	MW105, MW112A, MW121S, MW121D, MW122	Field duplicate MW112A (MW900) Field duplicate MW121D (MW901)
7/15/2008	GEO-1, GEO-2, MW-3, MW104, MW118S, MW118T, MW118D, MW119S, MW119T, MW120S, MW120D, MW116, MW117S, MW117T, MW117D, MW118D	Sample from MW104 was used for MS/MSD
7/16/2008		NA
Quarterly Groundwater Sampling 10/21/2008	MW104, GEO-1, GEO-2 MW116, MW117S, MW117T, MW117D, MW118S, MW118T, MW118D, MW202, MW-3	Sample from MW104 was used for MS/MSD
10/22/2008	MW105, MW112A, MW119S, MW119T, MW120S, MW120D, MW121S, MW121D, MW122	Field duplicate MW112A (MW901) Field duplicate MW121D (MW900)

**General Notes:**

1. NA = not applicable.
2. QA/QC = quality assurance/quality check.
3. MS/MSD = matrix spike/matrix spike duplicate.
4. VOC = volatile organic compound.
5. All groundwater samples submitted for VOC testing. Selected samples collected in January 2007, April 2010, April 2011, April 2012, and April 2013 were also submitted for natural attenuation parameter testing.



**Table 2-1. Summary of Groundwater Sampling Activities**  
**Phase V Status Report No. 5 and Remedial Monitoring Report No. 20**  
 50 Tufts Street  
 Somerville, Massachusetts

Sampling Event and Date	Sampled Locations	QA/QC Samples
Quarterly Groundwater Sampling 1/12/2009	MW105, MW112A, MW121S, MW121D, MW122	Field duplicate MW112A (MW900) Field duplicate MW121D (MW901)
1/13/2009	GEO-1, GEO-2, MW117S, MW117T, MW117D, MW119S,	NA
1/14/2009	MW104, MW-3, MW116, MW118S, MW118T, MW118D	Sample from MW104 was used for MS/MSD
Quarterly Groundwater Sampling 4/13/2009	GEO-1, GEO-2, MW105, MW112A, MW119S, MW119T, MW121S, MW121D, MW122	Field duplicate MW121D (MW900) Field duplicate MW112A (MW901)
4/14/2009	MW-3, MW104, MW117S, MW117T, MW117D, MW118T,	NA
4/15/2009	MW102, MW116, MW118S	NA
Quarterly Groundwater Sampling 7/14/2009	MW105, MW112A, MW116, MW118T, MW121S, MW121D, MW202	Field duplicate MW121D (MW900) Field duplicate MW112A (MW901)
7/15/2009	GEO-1, GEO-2, MW-3, MW104, MW117S, MW117T, MS117D, MW118S, MW118D, MW119S, MW119T,	Sample from MW104 was used for MS/MSD
Quarterly Groundwater Sampling 10/14/2009	GEO-1, GEO-2, MW104, MW105, MW112A, MW116, MW117S, MW117D, MW118S, MW118D, MW121S,	Field duplicate MW112A (MW900) Field duplicate MW118D (MW901)
10/15/2009	MW119T, MW119S, MW120S, MW120D, MW118T	Sample from MW104 was used for MS/MSD
10/16/2009	MW117T, MW3	
Annual Groundwater Sampling 4/12/2010	MW104, MW105, MW112A, MW118S, MW118T, MW118D, MW121S, MW121D, MW122, MW202	Field duplicate MW112A (MW900) Sample from MW104 was used for MS/MSD
4/13/2010	GEO-1, GEO-2, SH-MW3, MW116, MW117S, MW117T, MW117D, MW119S, MW119T, MW120S, MW120D	Field duplicate MW116 (MW901)
Semi-Annual Groundwater Sampling 10/27/2010	MW112A, MW122	NA
Annual Groundwater Sampling 4/20/2011	MW105, MW112A, MW117D, MW118S, MW118T,	Field duplicate MW112A (MW900)
4/21/2011	GEO-2, SH-MW3, MW104, MW116, MW117S, MW117T	Field duplicate MW116 (MW901)
4/22/2011	GEO-1, MW119S, MW119D, MW120S, MW120D, MW202	Sample from MW104 was used for MS/MSD
Semi-Annual Groundwater Sampling 11/16/2011	MW112A, MW122	NA
Annual Groundwater Sampling 4/16/2012	SH-MW-3, MW112A, MW117S, MW117T, MW117D, MW118D, MW119S, MW119T, MW120S, MW120D, MW121S, MW121D	Field duplicate MW112A (MW900)
4/17/2012	GEO-1, MW104, MW105, MW116, MW118T, MW122, MW202	Field duplicate MW116 (MW901) Sample from MW104 was used for MS/MSD
Semi-Annual Groundwater Sampling 11/12/2012	MW112A, MW118D, MW121D, MW122	NA

**General Notes:**

1. NA = not applicable.
2. QA/QC = quality assurance/quality check.
3. MS/MSD = matrix spike/matrix spike duplicate.
4. VOC = volatile organic compound.
5. All groundwater samples submitted for VOC testing. Selected samples collected in January 2007, April 2010, April 2011, April 2012, and April 2013 were also submitted for natural attenuation parameter testing.



**Table 2-1. Summary of Groundwater Sampling Activities**  
**Phase V Status Report No. 5 and Remedial Monitoring Report No. 20**  
**50 Tufts Street**  
**Somerville, Massachusetts**

Sampling Event and Date	Sampled Locations	QA/QC Samples
Annual Groundwater Sampling 4/23/2013	SH-MW-3, MW105, MW117T, MW119S, MW119T, MW120S, MW120D, MW121S, MW121D, MW122, MW202	NA
4/24/2013	GEO-1, MW104, MW112A, MW116, MW117S, MW117D, MW118S, MW118T, MW118D	Field duplicate MW116 (MW900) Field duplicate MW112A (MW901) Sample from MW104 was used for MS/MSD
5/1/2013	GEO-2	
Semi-Annual Groundwater Sampling 11/18/2013	MW112A, MW118D, MW121D, MW122	NA

**General Notes:**

1. NA = not applicable.
2. QA/QC = quality assurance/quality check.
3. MS/MSD = matrix spike/matrix spike duplicate.
4. VOC = volatile organic compound.
5. All groundwater samples submitted for VOC testing. Selected samples collected in January 2007, April 2010, April 2011, April 2012, and April 2013 were also submitted for natural attenuation parameter testing.













Table 2-2. Chemical Testing Results - Groundwater  
Phase V Status Report No. 5 and Remedial Monitoring Report No. 20  
50 Tufts Street  
Somerville, Massachusetts

Table with columns for Analyte, Method, Units, and 28 monitoring wells (MW101-MW104) with their respective dates. Rows include various Volatile Organic Compounds (VOCs) such as Acetone, Benzene, Bromobenzene, etc., with numerical values or 'NT' (Not Tested) for each well.

General Notes:  
1. Analytes detected in at least one sample are reported here. For a complete list of analytes refer to the laboratory data reports.  
2. ft bgs = feet below ground surface.  
3. µg/l = micrograms per liter.  
4. "<" = The analyte was not detected at a concentration above the specified reporting limit.  
5. SHA = Sanborn Head & Associates.  
6. Results in bold exceed the current applicable Method 1 GW2 standard.  
7. FD = Field Duplicate Sample.  
8. NT = Not Tested.

Qualifying Notes:  
A The result is estimated due to exceedence of holding time criteria.  
B The analyte found in associated method blank.  
C+ The result has a high bias due to surrogate recovery above upper control limits.  
E The value exceeds the calibration range.  
F+ The result has a high bias due to matrix spike recovery above upper control limits.  
F- The result has a low bias due to matrix spike recovery below lower control limits.  
G The result is estimated due to duplicate precision outside control limits.  
J The reported result is below the laboratory reporting limit and is estimated.  
J+ The reported result is estimated.  
K- The result has a low bias due to blank spike or laboratory control sample recovery below lower control limits.  
K+ The result has a high bias due to blank spike or laboratory control sample recovery above upper control limits.  
R The result is rejected due to gross exceedence of minimum response factor criteria.



Table 2-2. Chemical Testing Results - Groundwater Phase V Status Report No. 5 and Remedial Monitoring Report No. 20 50 Tufts Street Somerville, Massachusetts

Table with columns for Analyte, Method, Units, and various monitoring wells (MW104, MW105, MW106) with their respective dates and detection limits.

- General Notes: 1. Analytes detected in at least one sample are reported here. For a complete list of analytes refer to the laboratory data reports. 2. ft bgs = feet below ground surface. 3. µg/l = micrograms per liter. 4. < = The analyte was not detected at a concentration above the specified reporting limit. 5. SHA = Sanborn Head & Associates. 6. Results in bold exceed the current applicable Method 1 GW2 standard. 7. FD = Field Duplicate Sample. 8. NT = Not Tested.

- Qualifying Notes: A The result is estimated due to exceedence of holding time criteria. B The analyte found in associated method blank. C+ The result has a high bias due to surrogate recovery above upper control limits. E The value exceeds the calibration range. F+ The result has a high bias due to matrix spike recovery above upper control limits. F- The result has a low bias due to matrix spike recovery below lower control limits. G The result is estimated due to duplicate precision outside control limits. J The reported result is below the laboratory reporting limit and is estimated. J+ The reported result is estimated. K- The result has a low bias due to blank spike or laboratory control sample recovery below lower control limits. K+ The result has a high bias due to blank spike or laboratory control sample recovery above upper control limits. R The result is rejected due to gross exceedence of minimum response factor criteria.



Table 2-2. Chemical Testing Results - Groundwater  
Phase V Status Report No. 5 and Remedial Monitoring Report No. 20  
50 Tufts Street  
Somerville, Massachusetts

Analyte	Method	Units	MW107						MW108					MW109			MW110			MW111					MW112A					MW900 (FD)			
			2 to 12 1/18/07	2 to 12 4/13/07	2 to 12 7/18/07	2 to 12 10/10/07	2 to 12 1/10/08	2 to 12 4/17/08	2 to 12 1/18/07	2 to 12 4/16/07	2 to 12 7/18/07	2 to 12 10/10/07	2 to 12 1/10/08	2 to 12 4/17/08	3 to 13 1/18/07	3 to 13 4/16/07	3 to 13 4/17/08	3 to 13 1/18/07	3 to 13 4/17/07	3 to 13 5/23/07	4 to 14 1/18/07	4 to 14 4/16/07	4 to 14 7/18/07	4 to 14 10/10/07	4 to 14 1/10/08	4 to 14 4/17/08	4 to 19 3/23/07	4 to 19 4/16/07	4 to 19 7/18/07	4 to 19 10/10/07	4 to 19 1/10/08	4 to 19 4/17/08	4 to 19 7/14/08
<b>Volatile Organic Compounds (VOCs)</b>																																	
Acetone	8260	µg/l	< 5.0	< 5.0	NT	69.9	< 5.0	9.2	< 5.0	< 5.0	NT	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	NT	< 5.0	< 130	NT	< 250	< 5.0	< 10	< 5.0	< 5.0	NT	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Benzene			< 0.50	< 0.50	NT	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NT	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NT	< 0.50	< 13	NT	< 25	< 0.50	< 1.0	< 0.50	< 0.50	NT	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromobenzene			< 5.0	< 5.0	NT	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	NT	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	NT	< 5.0	< 130	NT	< 250	< 5.0	< 1.0	< 5.0	< 5.0	NT	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Bromodichloromethane			< 1.0	< 1.0	NT	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	NT	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	NT	< 1.0	< 25	NT	< 50	< 1.0	< 2.0	< 1.0	< 5.0	NT	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromofom			0.75 J	< 1.0	NT	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	NT	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	NT	< 1.0	< 25	NT	< 50	< 1.0	< 2.0	< 1.0	< 5.0	NT	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Butanone (MEK)			< 5.0	< 5.0	NT	7.7	< 5.0	1.1 J	< 5.0	< 5.0	NT	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	NT	< 5.0	< 130	NT	< 250	< 5.0	< 10	< 5.0	< 5.0	NT	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
n-Butylbenzene			< 5.0	< 5.0	NT	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	NT	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	NT	< 5.0	< 130	NT	< 250	< 5.0	< 10	< 5.0	< 5.0	NT	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Carbon disulfide			< 5.0	< 5.0	NT	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	NT	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	NT	< 5.0	< 130	NT	< 250	< 5.0	< 10	< 5.0	< 5.0	NT	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Carbon tetrachloride			< 1.0	< 1.0	< 1.0	< 1.0	< 1.0 G	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	NT	< 1.0	< 25	< 1.0	< 50	< 1.0	< 2.0	< 1.0	< 5.0	NT	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene			< 1.0	< 1.0	NT	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	NT	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	NT	< 1.0	< 25	NT	< 50	< 1.0	< 2.0	< 1.0	< 5.0	NT	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane			< 2.0	< 2.0	< 2.0	< 2.0	< 2.0 G	< 2.0	< 2.0	< 2.0	NT	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	NT	< 2.0	< 20	< 50	< 2.0	< 2.0	< 4.0	< 2.0	< 5.0	NT	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Chloroform			< 1.0	< 1.0	NT	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	NT	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	NT	< 1.0	< 25	NT	< 50	1.2	< 2.0	0.35 J	< 1.0	NT	< 1.0	0.32 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane			< 2.0	< 2.0	NT	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	NT	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	NT	< 2.0	< 50	NT	< 100	< 2.0	< 4.0	< 2.0	< 5.0	NT	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
1,3-Dichlorobenzene			< 1.0	< 1.0	NT	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	NT	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	NT	< 1.0	< 25	NT	< 50	< 1.0	< 2.0	< 1.0	< 5.0	NT	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorodifluoromethane			< 2.0	< 2.0	NT	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	NT	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	NT	< 2.0	< 50	NT	< 100	< 2.0	< 4.0	< 2.0	< 5.0	NT	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
1,1-Dichloroethane			4.6	4.3	0.52 J	< 1.0	2.1	3.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	NT	30.9	15.7 J	16.8	19.1 J	5.6	4.3 C+	27.6	24.0	6.4	35.6	114	40.9 C+	31.5	31.2	< 1.0	
1,2-Dichloroethane			< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	NT	< 1.0	< 25	0.43 J	< 50	< 1.0	< 2.0	< 1.0	< 5.0	NT	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethylene			3.2	3.7	< 1.0	< 1.0	1.3 G	2.3	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	NT	17.6	< 25	10.5	< 50	4.1	3.7 C+	19.7	10.8	6.7	19.7	82.4	36.6 C+	24.5	24.5	< 1.0	
cis-1,2-Dichloroethylene			< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	NT	22.6	17.2 J	56.3	63.9	10.6	4.4 C+	< 1.0	0.54 J	0.98 J	4.2	18.7	55.3 C+	81.5	80.9	< 1.0	
trans-1,2-Dichloroethylene			< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	NT	< 1.0	< 25	1.5	< 50	< 1.0	< 2.0	< 1.0	< 5.0	NT	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
1,2-Dichloropropane			< 2.0	< 2.0	NT	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	NT	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	NT	< 2.0	< 50	NT	< 100	< 2.0	< 4.0	< 2.0	< 5.0	NT	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
1,4-Dioxane			< 25	< 25	NT	< 25	< 25	< 25	< 25	< 25	NT	< 25	< 25	< 25	< 25	< 25	NT	< 25	< 630	NT	< 1300	< 25	< 50	< 25	< 25	NT	< 25	< 25	< 25	< 25	< 25	< 25	
Ethylbenzene			< 1.0	< 1.0	NT	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	NT	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	NT	< 1.0	< 25	NT	< 50	< 1.0	< 2.0	< 1.0	< 5.0	NT	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
2-Hexanone			< 5.0	< 5.0	NT	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	NT	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	NT	< 5.0	< 130	NT	< 250	< 5.0	< 10	< 5.0	< 5.0	NT	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Isopropyl benzene			< 5.0	< 5.0	NT	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	NT	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	NT	< 5.0	< 130	NT	< 250	< 5.0	< 10	< 5.0	< 5.0	NT	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
4-Isopropyltoluene			< 5.0	< 5.0	NT	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	NT	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	NT	< 5.0	< 130	NT	< 250	< 5.0	< 10	< 5.0	< 5.0	NT	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Methyl tert-butyl ether			< 1.0	< 1.0	NT	< 1.0	0.21 J	< 1.0	< 1.0	< 1.0	NT	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	NT	< 1.0	< 25	NT	< 50	0.45 J	< 2.0	10.8	13.8	NT	20.3	87.0	20.5 C+	14.9	13.5	< 1.0	
Methylene chloride			< 2.0	< 2.0	NT	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	NT	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	NT	< 2.0	31.4 J	NT	< 100	< 2.0	< 4.0	< 2.0	< 5.0	NT	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Naphthalene			< 5.0	< 5.0	NT	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	NT	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	NT	< 5.0	< 130	NT	< 250	< 5.0	< 10	< 5.0	< 5.0	NT	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
n-Propylbenzene			< 5.0	< 5.0	NT	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	NT	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	NT	< 5.0	< 130	NT	< 250	< 5.0	< 10	< 5.0	< 5.0	NT	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Tert-amyl methyl ether			< 2.0	< 2.0	NT	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	NT	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	NT	< 2.0	< 50	NT	< 100	< 2.0	< 4.0										





Table 2-2. Chemical Testing Results - Groundwater  
Phase V Status Report No. 5 and Remedial Monitoring Report No. 20  
50 Tufts Street  
Somerville, Massachusetts

Table with columns for Analyte, Method, Units, Sample Location (MW112A, MW901 (FD), MW112A, MW900 (FD), MW112A, MW901 (FD), MW112A, MW900 (FD), MW112A, MW900 (FD), MW112A, MW900 (FD), MW112A, MW900 (FD), MW112A, MW900 (FD), MW112A, MW900 (FD), MW112A, MW900 (FD), MW112A, MW900 (FD), MW112A, MW900 (FD), MW113, MW113, MW113, MW900 (FD), MW113, MW900 (FD), MW113, MW900 (FD), MW113, MW900 (FD), MW113, MW900 (FD). Rows include various chemical compounds like Acetone, Benzene, Bromobenzene, etc.

- General Notes:
1. Analytes detected in at least one sample are reported here. For a complete list of analytes refer to the laboratory data reports.
2. ft bgs = feet below ground surface.
3. µg/l = micrograms per liter.
4. \*c\* = The analyte was not detected at a concentration above the specified reporting limit.
5. SHA = Sanborn Head & Associates.
6. Results in bold exceed the current applicable Method 1 GW2 standard.
7. FD = Field Duplicate Sample.
8. NT = Not Tested.

- Qualifying Notes:
A The result is estimated due to exceedence of holding time criteria.
B The analyte found in associated method blank.
C+ The result has a high bias due to surrogate recovery above upper control limits.
E The value exceeds the calibration range.
F+ The result has a high bias due to matrix spike recovery above upper control limits.
F- The result has a low bias due to matrix spike recovery below lower control limits.
G The result is estimated due to duplicate precision outside control limits.
J The reported result is below the laboratory reporting limit and is estimated.
J+ The reported result is estimated.
K- The result has a low bias due to blank spike or laboratory control sample recovery below lower control limits.
K+ The result has a high bias due to blank spike or laboratory control sample recovery above upper control limits.
R The result is rejected due to gross exceedence of minimum response factor criteria.

Table 2-2. Chemical Testing Results - Groundwater  
Phase V Status Report No. 5 and Remedial Monitoring Report No. 20  
50 Tufts Street  
Somerville, Massachusetts

Analyte	Method	Units	MW114							MW115							MW116														
			MW114	MW114	MW114	MW114	MW114	MW114	MW115	MW115	MW115 R	MW115	MW115	MW115 R	MW116	MW116	MW116	MW901 (FD)	MW116	MW901 (FD)	MW116	MW901 (FD)	MW116	MW901 (FD)	MW116	MW116	MW116	MW116	MW116	MW116	
			7 to 17	7 to 17	7 to 17	7 to 17	7 to 17	7 to 17	10 to 25	10 to 25	10 to 25	10 to 25	10 to 25	10 to 25	5 to 15	5 to 15	5 to 15	5 to 15	5 to 15	5 to 15	5 to 15	5 to 15	5 to 15	5 to 15	5 to 15	5 to 15	5 to 15	5 to 15	5 to 15	5 to 15	5 to 15
Sample Location:																															
Sample Name:																															
Well Screen Interval (ft bgs):																															
Sample Date:																															
Collected By:																															
Method:																															
Units:																															
Analyte:																															
Volatile Organic Compounds (VOCs)																															
Acetone	8260	µg/l	< 5.0	< 5.0	NT	< 5.0	< 5.0	2.1 J	< 5.0	< 5.0	NT	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	NT	NT	< 10 J+	< 10 J+	< 5.0	< 5.0 J+	< 5.0	< 5.0	< 10	< 5.0	< 10	< 5.0	< 10 F+	< 10	
Benzene			< 0.50	< 0.50	NT	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NT	< 0.50	< 0.50	< 0.50	0.24 J	< 0.50	NT	NT	< 1.0	< 1.0	< 0.50	< 0.50	< 0.50	< 0.50	< 1.0	< 0.50	< 1.0	< 0.50	< 1.0	< 1.0	
Bromobenzene			< 5.0	< 5.0	NT	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	NT	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	NT	NT	< 1.0	< 1.0	< 5.0	< 5.0	< 5.0	< 5.0	< 1.0	< 5.0	< 1.0	< 5.0	< 1.0	< 1.0	
Bromodichloromethane			< 1.0	< 1.0	NT	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	NT	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	NT	NT	< 2.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 2.0	< 1.0	< 2.0	< 2.0	
Bromoform			< 1.0	< 1.0	NT	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	NT	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	NT	NT	< 10 J+	< 10 J+	< 5.0	< 5.0 J+	< 5.0	< 5.0	< 10	< 5.0	< 10	< 5.0	< 10	< 10	
2-Butanone (MEK)			< 5.0	< 5.0	NT	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	NT	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	NT	NT	< 10 J+	< 10 J+	< 5.0	< 5.0 J+	< 5.0	< 5.0	< 10	< 5.0	< 10	< 5.0	< 10	< 10	
n-Butylbenzene			< 5.0	< 5.0	NT	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	NT	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	NT	NT	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 5.0	< 10	< 5.0	< 10	< 10	
Carbon disulfide			< 5.0	< 5.0	NT	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	NT	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	NT	NT	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 5.0	< 10	< 5.0	< 10	< 10	
Carbon tetrachloride			< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 2.0	< 1.0	< 2.0	< 2.0	
Chlorobenzene			< 1.0	< 1.0	NT	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	NT	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	NT	NT	< 2.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 2.0	< 1.0	< 2.0	< 2.0	
Chloroethane			< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	2.4	2.3	2.4 J	2.4 J	< 2.0	< 2.0	< 2.0	< 2.0	< 4.0	< 2.0	< 4.0	< 2.0	< 4.0	< 4.0	
Chloroform			< 1.0	< 1.0	NT	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	NT	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	NT	NT	< 4.0	< 4.0	< 2.0	< 2.0	< 2.0	< 2.0	< 4.0	< 2.0	< 4.0	< 2.0	< 4.0	< 4.0	
Chloromethane			< 2.0	< 2.0	NT	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	NT	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	NT	NT	< 2.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 2.0	< 1.0	< 2.0	< 2.0	
1,3-Dichlorobenzene			< 1.0	< 1.0	NT	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	NT	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	NT	NT	< 4.0 J+	< 4.0 J+	< 2.0	< 2.0	< 2.0	< 2.0	< 4.0	< 2.0	< 4.0	< 2.0	< 4.0	< 4.0	
Dichlorodifluoromethane			< 2.0	< 2.0	NT	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	NT	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	NT	NT	< 2.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 2.0	< 1.0	< 2.0	< 2.0	
1,1-Dichloroethane			< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	135	4.4	97.3	96.9	80.1	79.3	18.9	15.6	66.8	64.5	114	109	72.5	101	69.7
1,2-Dichloroethane			< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 2.0	< 1.0	< 2.0	< 2.0	
1,1-Dichloroethylene			< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	107	2.7	33.8	34.0	24.8	22.4	14.7	11.8	46.3	45.7	78.4	79.8	56.5	70.6	
cis-1,2-Dichloroethylene			< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	103	21.7	415	431	346	341	49.5	42.9	105	102	286	319	146	84.1	
trans-1,2-Dichloroethylene			< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	4.3	4.4	2.5	2.4	0.88 J	1.3	< 1.0	< 1.0	< 2.0	< 1.0	< 2.0	< 1.0	< 2.0	< 2.0	
1,2-Dichloropropane			< 2.0	< 2.0	NT	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	NT	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	NT	NT	< 4.0	< 4.0	< 2.0	< 2.0	< 2.0	< 2.0	< 4.0	< 2.0	< 4.0	< 2.0	< 4.0	< 4.0	
1,4-Dioxane			< 25	< 25	NT	< 25	< 25	< 25	< 25	< 25	NT	< 25	< 25	< 25	< 25	< 25	NT	NT	< 50	< 50	< 25	< 25	< 25	< 25	< 50	< 25	< 50	< 25	< 50	< 50	
Ethylbenzene			< 1.0	< 1.0	NT	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	NT	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	NT	NT	< 10 J+	< 10 J+	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 5.0	< 10	< 5.0	< 10	< 10	
2-Hexanone			< 5.0	< 5.0	NT	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	NT	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	NT	NT	< 10 J+	< 10 J+	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 5.0	< 10	< 5.0	< 10	< 10	
Isopropyl benzene			< 5.0	< 5.0	NT	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	NT	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	NT	NT	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 5.0	< 10	< 5.0	< 10	< 10	
4-Isopropyltoluene			< 5.0	< 5.0	NT	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	NT	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	NT	NT	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 5.0	< 10	< 5.0	< 10	< 10	
Methyl tert-butyl ether			< 1.0	< 1.0	NT	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	NT	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	12.3	0.40 J	NT	NT	12.5	12.7	2.1 J+	1.3 J+	7.1	6.9	18.2	18.0	9.0	11.7	7.2
Methylene chloride			< 2.0	< 2.0	NT	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	NT	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	NT	NT	< 4.0	< 4.0	< 2.0	< 2.0	< 2.0	< 2.0	< 4.0	< 2.0	< 4.0	< 2.0	< 4.0	< 4.0	
Naphthalene			< 5.0	< 5.0	NT	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	NT	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	NT	NT	< 10	< 10	< 5.0	0.68 J	< 5.0	< 5.0	< 10	< 5.0	< 10	< 5.0	< 10	< 5.0	< 10
n-Propylbenzene			< 5.0	< 5.0	NT	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	NT	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	NT	NT	< 4.0	< 4.0	< 2.0	< 2.0	< 2.0	< 2.0	< 4.0	< 2.0	< 4.0	< 2.0	< 4.0	< 4.0	
Tert-amyl methyl ether			< 2.0	< 2.0	NT	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	NT	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	NT	NT	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 5.0	< 10	< 5.0	< 10	< 10	
1,1,1,2-Tetrachloroethane			< 5.0	< 5.0	NT	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	NT	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	NT	NT	< 4.0	< 4.0	< 2.0	< 2.0	< 2.0	< 2.0	< 4.0	< 2.0	< 4.0	< 2.0	< 4.0	< 4.0	
Tetrachloroethylene (PCE)			< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	1180	32.2	167	168	116										





Table 2-2. Chemical Testing Results - Groundwater Phase V Status Report No. 5 and Remedial Monitoring Report No. 20 50 Tufts Street Somerville, Massachusetts

Table with columns for Analyte, Method, Units, and various MW116, MW117D, and MW117S monitoring wells. Rows include Volatile Organic Compounds (VOCs) such as Acetone, Benzene, Bromobenzene, etc.

- General Notes:
1. Analytes detected in at least one sample are reported here. For a complete list of analytes refer to the laboratory data reports.
2. ft bgs = feet below ground surface.
3. µg/l = micrograms per liter.
4. "<" = The analyte was not detected at a concentration above the specified reporting limit.
5. SHA = Sanborn Head & Associates.
6. Results in bold exceed the current applicable Method 1 GW2 standard.
7. FD = Field Duplicate Sample.
8. NT = Not Tested.

- Qualifying Notes:
A The result is estimated due to exceedance of holding time criteria.
B The analyte found in associated method blank.
C+ The result has a high bias due to surrogate recovery above upper control limits.
E The value exceeds the calibration range.
F+ The result has a high bias due to matrix spike recovery above upper control limits.
F- The result has a low bias due to matrix spike recovery below lower control limits.
G The result is estimated due to duplicate precision outside control limits.
J The reported result is below the laboratory reporting limit and is estimated.
J+ The reported result is estimated.
K- The result has a low bias due to blank spike or laboratory control sample recovery below lower control limits.
K+ The result has a high bias due to blank spike or laboratory control sample recovery above upper control limits.
R The result is rejected due to gross exceedance of minimum response factor criteria.









Table 2-2. Chemical Testing Results - Groundwater
Phase V Status Report No. 5 and Remedial Monitoring Report No. 20
50 Tufts Street
Somerville, Massachusetts

Table with columns for Analyte, Method, Units, and 28 monitoring wells (MW118D, MW118S, MW118T). Rows include various Volatile Organic Compounds (VOCs) such as Acetone, Benzene, Bromobenzene, etc., with their respective detection levels and units.

- General Notes:
1. Analytes detected in at least one sample are reported here. For a complete list of analytes refer to the laboratory data reports.
2. ft bgs = feet below ground surface.
3. µg/l = micrograms per liter.
4. \*c\* = The analyte was not detected at a concentration above the specified reporting limit.
5. SHA = Sanborn Head & Associates.
6. Results in bold exceed the current applicable Method 1 GW2 standard.
7. FD = Field Duplicate Sample.
8. NT = Not Tested.

- Qualifying Notes:
A The result is estimated due to exceedence of holding time criteria.
B The analyte found in associated method blank.
C+ The result has a high bias due to surrogate recovery above upper control limits.
E The value exceeds the calibration range.
F+ The result has a high bias due to matrix spike recovery above upper control limits.
F- The result has a low bias due to matrix spike recovery below lower control limits.
G The result is estimated due to duplicate precision outside control limits.
J The reported result is below the laboratory reporting limit and is estimated.
J+ The reported result is estimated.
K- The result has a low bias due to blank spike or laboratory control sample recovery below lower control limits.
K+ The result has a high bias due to blank spike or laboratory control sample recovery above upper control limits.
R The result is rejected due to gross exceedence of minimum response factor criteria.







Table 2-2. Chemical Testing Results - Groundwater  
Phase V Status Report No. 5 and Remedial Monitoring Report No. 20  
50 Tufts Street  
Somerville, Massachusetts

Table with columns for Sample Location, Analyte, Method, Units, and 28 MW120D/MW120S monitoring points. Rows include Volatile Organic Compounds (VOCs) such as Acetone, Benzene, Bromobenzene, etc.

- General Notes:
1. Analytes detected in at least one sample are reported here. For a complete list of analytes refer to the laboratory data reports.
2. ft bgs = feet below ground surface.
3. µg/l = micrograms per liter.
4. < = The analyte was not detected at a concentration above the specified reporting limit.
5. SHA = Sanborn Head & Associates.
6. Results in bold exceed the current applicable Method 1 GW2 standard.
7. FD = Field Duplicate Sample.
8. NT = Not Tested

- Qualifying Notes:
A The result is estimated due to exceedance of holding time criteria.
B The analyte found in associated method blank.
C+ The result has a high bias due to surrogate recovery above upper control limits.
E The value exceeds the calibration range.
F+ The result has a high bias due to matrix spike recovery above upper control limits.
F- The result has a low bias due to matrix spike recovery below lower control limits.
G The result is estimated due to duplicate precision outside control limits.
J The reported result is below the laboratory reporting limit and is estimated.
J+ The reported result is estimated.
K- The result has a low bias due to blank spike or laboratory control sample recovery below lower control limits.
K+ The result has a high bias due to blank spike or laboratory control sample recovery above upper control limits.
R The result is rejected due to gross exceedance of minimum response factor criteria.









Table 2-2. Chemical Testing Results - Groundwater  
 Phase V Status Report No. 5 and Remedial Monitoring Report No. 20  
 50 Tufts Street  
 Somerville, Massachusetts

Analyte	Method	Units	Sample Location:																																			
			MW122								MW201								MW202																			
Well Screen Interval (ft bgs)	Sample Name:	Sample Date:	Sample Date:																																			
			Collected By:	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16
Volatile Organic Compounds (VOCs)																																						
Acetone	8260	µg/l	< 5.0 J+	9.6 J	11.1	7.2	5.7	< 5.0	< 5.0 F-	< 10	3.8 J+	< 5.0	17.8	< 5.0	< 5.0	< 25 K-	< 5.0	< 5.0 K-	NT	< 5.0 J+	< 5.0	< 5.0	NT	< 5.0 J+	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	
Benzene			< 0.50	< 1.0	0.46 J	< 0.50	< 0.50	< 0.50	0.23 J	< 1.0	< 0.50	< 0.50	< 1.0	< 0.50	< 0.50	< 2.5	< 2.5	< 2.5	NT	< 0.50	< 0.50	< 0.50	NT	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50		
Bromobenzene			< 5.0	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 25	< 25	< 25	NT	< 5.0	< 5.0	< 5.0	NT	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	
Bromodichloromethane			< 1.0	1.1 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 5.0	< 5.0	< 5.0	NT	< 1.0	< 1.0	< 1.0	NT	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Bromoforn			< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 5.0	< 5.0	< 5.0	NT	< 1.0	< 1.0	< 1.0	NT	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
2-Butanone (MEK)			< 5.0 J+	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 25 K-	< 25	< 25	NT	< 5.0 J+	< 5.0	< 5.0	NT	< 5.0 J+	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	
n-Butylbenzene			< 5.0	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 25	< 25	< 25	NT	< 5.0	< 5.0	< 5.0	NT	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Carbon disulfide			< 5.0	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 25	< 25	< 25	NT	< 5.0	< 5.0	< 5.0	NT	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	
Carbon tetrachloride			< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 5.0	< 5.0	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Chlorobenzene			< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 5.0	< 5.0	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Chloroethane			< 2.0	< 4.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0 F-	< 4.0	< 2.0	< 2.0	< 4.0	< 2.0	< 2.0	< 10	< 10	< 10	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	
Chloroforn			< 1.0	< 2.0	< 1.0	0.61 J	< 1.0	< 1.0	< 1.0	0.75 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 5.0	< 5.0	< 5.0	< 1.0	0.47 J	0.40 J	0.24 J	NT	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	0.89 J	< 1.0	< 1.0	< 1.0	
Chloromethane			< 2.0	< 4.0	< 2.0	< 2.0 J+	< 2.0	< 2.0	< 2.0 F-	< 4.0	< 2.0	< 2.0	< 4.0	< 2.0	< 2.0	< 10	< 10	< 10	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	
1,3-Dichlorobenzene			< 1.0	< 2.0	< 1.0	< 1.0	0.60 J	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 5.0	< 5.0	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Dichlorodifluoromethane			< 2.0	< 4.0	< 2.0 J+	< 2.0	< 2.0	< 2.0	< 2.0 F-	< 4.0	< 2.0	< 2.0	< 4.0	< 2.0	< 2.0	< 10	< 10	< 10	< 2.0	< 2.0 J+	< 2.0	< 2.0	NT	< 2.0 J+	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	
1,1-Dichloroethane			19.3	30.4 C+	10.1	15.0	16.0	25.8	21.2	20.8	29.6	20.3	19.1	15.2	17.2	14.4	11.1	12.7	< 1.0	0.66 J	< 1.0	0.23 J	0.50 J	< 1.0	< 1.0	< 1.0	0.46 J	< 1.0	< 1.0	< 1.0	< 1.0	0.34 J	< 1.0	< 1.0	< 1.0	< 1.0		
1,2-Dichloroethane			< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 5.0	< 5.0	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		
1,1-Dichloroethylene			4.0	9.0 C+	1.4	4.4	3.4	6.1	5.3 F-	6.6	7.3	4.6	8.3	4.1	6.4	4.7 J	4.1 J	4.4 J	4.7	4.9	5.2	3.0	1.1	< 1.0	< 1.0	< 1.0	2.9	2.8	1.6	1.9	3.2	< 1.0	< 1.0	< 1.0	< 1.0			
cis-1,2-Dichloroethylene			60.6	70.7 C+	34.0	62.5	91.5	61.9	39.4	109.0	58.6	117	45.5	66.4	61.5	84.7	56.2	67.2	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		
trans-1,2-Dichloroethylene			0.87 J	< 2.0	< 1.0	< 1.0	< 1.0	0.93 J	< 1.0	< 2.0	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 5.0	< 5.0	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		
1,2-Dichloropropane			< 2.0	< 4.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 4.0	< 2.0	< 2.0	< 4.0	< 2.0	< 2.0	< 10	< 10	< 10	NT	< 2.0	< 2.0	< 2.0	NT	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0		
1,4-Dioxane			< 25	< 50	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25 K-	< 130	< 260	< 260	NT	< 25	< 25	< 25	NT	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	
Ethylbenzene			< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 5.0	< 5.0	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		
2-Hexanone			< 5.0 J+	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 25	< 25	< 25	< 1.0	< 5.0 J+	< 5.0	< 5.0	NT	< 5.0 J+	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	
Isopropyl benzene			< 5.0	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 25	< 25	< 25	< 1.0	< 5.0	< 5.0	< 5.0	NT	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	
4-Isopropyltoluene			< 3.0	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 25	< 25	< 25	< 1.0	< 5.0	< 5.0	< 5.0	NT	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	
Methyl tert-butyl ether			5.3	3.9 C+	1.9	5.6	2.5	3.2	3.3	2.9	2.3	2.7	2.1	2.7	2.2 J	< 5.0 K-	< 5.0	NT	75.8	240	0.26 J	NT	< 1.0	< 1.0	< 1.0	1.2	< 1.0	< 1.0	0.92 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0			







**Table 3-1. Summary of SSDS Monitoring Events - Capuano Center  
Phase V Status Report No. 5 and Remedial Monitoring Report No. 20  
50 Tufts Street  
Somerville, Massachusetts**

Monitoring Date	Monitoring Event per RMR Report Period	Type of Monitoring Event	SSDS Field Parameters Measured	Analytical Samples Collected (Yes/No)?
6/21/2013	1	SSDS Monthly Monitoring	-Pressure readings and VOC concentrations at each manifold pipe, the combined influent, and effluent pipes. -System flow rate.	No
7/31/2013	2	SSDS Monthly Monitoring	-Pressure readings and VOC concentrations at each manifold pipe, the combined influent, and effluent pipes. -System flow rate.	No
8/12/2013	3	SSDS Monthly Monitoring	-Pressure readings at each manifold pipe, the combined influent, and effluent pipes. -Pressure readings at all the exterior extraction pipes.	No
9/3/2013	4	SSDS Monthly Monitoring	-Pressure readings at each manifold pipe, the combined influent, and effluent pipes.	No
10/8/2013	5	SSDS Monthly Monitoring	-Pressure readings and VOC concentrations at each manifold pipe, the combined influent, and effluent pipes. -Pressure readings and VOC concentrations at all the exterior extraction pipes. -Pressure readings and VOC concentrations at all the interior monitoring points. -System flow rate.	No
11/25/2013	6	SSDS Monthly Monitoring	-Pressure readings and VOC concentrations at each manifold pipe, the combined influent, and effluent pipes. -System flow rate.	No

**General Notes:**

1. SSDS = Sub-Slab Depressurization System.
2. RMR = Remedial Monitoring Report.
3. VOC = Volatile Organic Compound.
4. VOC measurements collected with a ppb-RAE calibrated to 10 parts per million (ppm) isobutylene, or a Thermo Environmental 580B calibrated to 100 ppm.
5. Pressure readings collected using a Dwyer 475-000-FM manometer.



Table 2-2. Chemical Testing Results - Groundwater  
Phase V Status Report No. 5 and Remedial Monitoring Report No. 20  
50 Tufts Street  
Somerville, Massachusetts

Table with columns for Analyte, Method, Units, and various sampling locations (SH-MW2, SH-MW3, SHMW3, SH-MW3, SHMW3, SH-MW3, SH-MW3, SH-MW3, SH-MW3, SH-MW3, SH-MW3, SH-MW3, SH-MW3, SH-MW3, SH-MW3, SH-MW3, SH-MW3, SH-MW3, SH-MW3, COBBLE-IR-1). Rows list various Volatile Organic Compounds (VOCs) and their concentrations.

- General Notes:
1. Analytes detected in at least one sample are reported here. For a complete list of analytes refer to the laboratory data reports.
2. ft bgs = feet below ground surface.
3. µg/l = micrograms per liter.
4. <= = The analyte was not detected at a concentration above the specified reporting limit.
5. SHA = Sanborn Head & Associates.
6. Results in bold exceed the current applicable Method 1 GW2 standard.
7. FD = Field Duplicate Sample.
8. NT = Not Tested.

- Qualifying Notes:
A The result is estimated due to exceedance of holding time criteria.
B The analyte found in associated method blank.
C+ The result has a high bias due to surrogate recovery above upper control limits.
E The value exceeds the calibration range.
F+ The result has a high bias due to matrix spike recovery above upper control limits.
F- The result has a low bias due to matrix spike recovery below lower control limits.
G The result is estimated due to duplicate precision outside control limits.
J The reported result is below the laboratory reporting limit and is estimated.
J+ The reported result is estimated.
K- The result has a low bias due to blank spike or laboratory control sample recovery below lower control limits.
K+ The result has a high bias due to blank spike or laboratory control sample recovery above upper control limits.
R The result is rejected due to gross exceedance of minimum response factor criteria.





**Table 3-2. Chemical Testing Results - Indoor and Outdoor Air  
Phase V Status Report No. 5 and Remedial Monitoring Report No. 20  
Capuano Center  
150 Glen Street  
Somerville, Massachusetts**

Sample Location: Sample ID:  Sample Date: Units:		Cafetorium		Room 101				Room 108				Room 121		Room 122			
		150 GLEN-CAF		150 GLEN-ROOM 101A		150 GLEN-ROOM 101B		150 GLEN-ROOM 108A		150 GLEN-ROOM 108B		150 GLEN-ROOM 121		150 GLEN-ROOM 122		150 GLEN-RM 122	
		1/6/07		12/27/06		12/28/06		12/27/06		12/28/06		1/6/07		1/6/07		2/7/07	
		µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv
Analyte	Method																
<b>Volatile Organic Compounds (VOCs)</b>	<b>TO-15</b>																
Carbon tetrachloride		0.49 J J+	0.078 J J+	< 1.3	< 0.20	< 1.3	< 0.20	0.94 J	0.15 J	< 1.3	< 0.20	0.52 J J+	0.082 J J+	0.51 J	0.081 J J+	0.69 J	0.11 J
1,1-Dichloroethane		< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20
1,2-Dichloroethane		< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20
1,1-Dichloroethylene		< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20
cis-1,2-Dichloroethylene		< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20
1,1,2,2-Tetrachloroethane		< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20
Tetrachloroethylene (PCE)		0.88 J J+	0.13 J J+	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20
1,1,1-Trichloroethane (TCA)		< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20
Trichloroethylene (TCE)		< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20

**General Notes:**

1. Analytes detected in at least one sample are reported here. For a complete list of analytes see the attached laboratory data sheets.
2. µg/m<sup>3</sup> = micrograms per cubic meter.
3. ppbv = parts per billion by volume.
4. "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit.
5. FD = Field Duplicate.
6. NT = Not Tested.
7. The samples collected in August 2009, November 2009, February 2010, November 2010, and March 2011 were collected over a 24-hour period.

**Qualifying Notes:**

- J The reported result is below the laboratory reporting limit and is estimated.
- J+ The reported result is estimated.



**Table 3-2. Chemical Testing Results - Indoor and Outdoor Air  
Phase V Status Report No. 5 and Remedial Monitoring Report No. 20**  
Capuano Center  
150 Glen Street  
Somerville, Massachusetts

Sample Location:		Room 125						Room 126									
		Sample ID: 150 GLEN-ROOM 125A		150 GLEN-ROOM 125B		150 GLEN-ROOM 126		150 GLEN-ROOM 100 (FD-Room 126)		150 GLEN-RM 126		150GLEN-ROOM 126		150 GLEN-ROOM 126		150 GLEN-RM 126	
Sample Date:		12/27/06		12/28/06		1/13/07		1/13/07		2/7/07		3/8/07		4/20/07		5/17/07	
Units:		µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv
Analyte	Method																
<b>Volatile Organic Compounds (VOCs)</b>	TO-15																
Carbon tetrachloride		1.0 J	0.16 J	< 1.3	< 0.20	0.69 J	0.11 J	0.63 J	0.10 J	0.94 J	0.15 J	< 1.3	< 0.20	< 1.3	< 0.20	< 1.3	< 0.20
1,1-Dichloroethane		< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20
1,2-Dichloroethane		< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20
1,1-Dichloroethylene		< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20
cis-1,2-Dichloroethylene		< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20
1,1,2,2-Tetrachloroethane		< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20
Tetrachloroethylene (PCE)		< 1.4	< 0.20	< 1.4	< 0.20	0.88 J	0.13 J	0.75 J	0.11 J	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20
1,1,1-Trichloroethane (TCA)		< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20
Trichloroethylene (TCE)		< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20

**General Notes:**

1. Analytes detected in at least one sample are reported here. For a complete list of analytes see the attached laboratory data sheets.
2. µg/m<sup>3</sup> = micrograms per cubic meter.
3. ppbv = parts per billion by volume.
4. "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit.
5. FD = Field Duplicate.
6. NT = Not Tested.
7. The samples collected in August 2009, November 2009, February 2010, November 2010, and March 2011 were collected over a 24-hour period.

**Qualifying Notes:**

- J The reported result is below the laboratory reporting limit and is estimated.
- J+ The reported result is estimated.



**Table 3-2. Chemical Testing Results - Indoor and Outdoor Air  
Phase V Status Report No. 5 and Remedial Monitoring Report No. 20  
Capuano Center  
150 Glen Street  
Somerville, Massachusetts**

Sample Location:		Room 126 (continued)															
Sample ID:		150GLEN-RM126		150GLEN-RM126		150GLEN-RM126		150GLEN-RM126		150GLEN-RM126		150GLEN-RM126		150GLEN-RM126		150GLEN-RM126	
Sample Date:		7/30/07		9/10/07		10/8/07		10/14/07		11/15/07		12/13/07		1/21/08		2/19/08	
Units:		µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv
Analyte	Method																
<b>Volatile Organic Compounds (VOCs)</b>	TO-15																
Carbon tetrachloride		0.60 J	0.095 J	0.69 J	0.11 J	0.82 J	0.13 J	< 1.3	< 0.20	0.69 J	0.11 J	0.59 J	0.093 J	< 1.3	< 0.20	< 1.3	< 0.20
1,1-Dichloroethane		< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20
1,2-Dichloroethane		< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20
1,1-Dichloroethylene		< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20
cis-1,2-Dichloroethylene		< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20
1,1,2,2-Tetrachloroethane		< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20
Tetrachloroethylene (PCE)		< 1.4	< 0.20	< 1.4	< 0.20	1.0 J	0.15 J	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20
1,1,1-Trichloroethane (TCA)		< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20
Trichloroethylene (TCE)		< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20

**General Notes:**

1. Analytes detected in at least one sample are reported here. For a complete list of analytes see the attached laboratory data sheets.
2. µg/m<sup>3</sup> = micrograms per cubic meter.
3. ppbv = parts per billion by volume.
4. "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit.
5. FD = Field Duplicate.
6. NT = Not Tested.
7. The samples collected in August 2009, November 2009, February 2010, November 2010, and March 2011 were collected over a 24-hour period.

**Qualifying Notes:**

- J The reported result is below the laboratory reporting limit and is estimated.
- J+ The reported result is estimated.



**Table 3-2. Chemical Testing Results - Indoor and Outdoor Air  
Phase V Status Report No. 5 and Remedial Monitoring Report No. 20**  
Capuano Center  
150 Glen Street  
Somerville, Massachusetts

Sample Location:		Room 126 (continued)															
		150GLEN-RM126		150GLEN-RM126		150GLEN-RM126		150GLEN-RM126		150GLEN-RM126		150GLEN-RM126		150GLEN-RM126		150GLEN-RM126	
Sample ID:		2/22/08		3/17/2008		4/21/08		8/18/08		11/24/08		3/2/09		8/27/09		11/11/09	
Sample Date:		2/22/08		3/17/2008		4/21/08		8/18/08		11/24/08		3/2/09		8/27/09		11/11/09	
Units:		µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv
Analyte	Method																
<b>Volatile Organic Compounds (VOCs)</b>	TO-15																
Carbon tetrachloride		< 1.3	< 0.20	< 1.3	< 0.20	0.69 J	0.11 J	0.60 J	0.096 J	0.60 J	0.096 J	< 1.3	< 0.20	< 1.3	< 0.20	< 1.3	< 0.20
1,1-Dichloroethane		< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20
1,2-Dichloroethane		< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20
1,1-Dichloroethylene		< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20
cis-1,2-Dichloroethylene		< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20
1,1,2,2-Tetrachloroethane		< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	1.2 J	0.18 J
Tetrachloroethylene (PCE)		< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20
1,1,1-Trichloroethane (TCA)		< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20
Trichloroethylene (TCE)		< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20

**General Notes:**

1. Analytes detected in at least one sample are reported here. For a complete list of analytes see the attached laboratory data sheets.
2. µg/m<sup>3</sup> = micrograms per cubic meter.
3. ppbv = parts per billion by volume.
4. "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit.
5. FD = Field Duplicate.
6. NT = Not Tested.
7. The samples collected in August 2009, November 2009, February 2010, November 2010, and March 2011 were collected over a 24-hour period.

**Qualifying Notes:**

- J The reported result is below the laboratory reporting limit and is estimated.
- J+ The reported result is estimated.





**Table 3-2. Chemical Testing Results - Indoor and Outdoor Air**  
**Phase V Status Report No. 5 and Remedial Monitoring Report No. 20**  
 Capuano Center  
 150 Glen Street  
 Somerville, Massachusetts

Sample Location:		Room 126 (continued)						Room 134				Room 136		Room 137			
Sample ID:		150GLEN-RM126		150GLEN-RM126		150GLEN-RM126		150 GLEN-ROOM 134		150 GLEN-RM 134		150 GLEN-ROOM 136		150 GLEN-ROOM 137A		150 GLEN-ROOM 137B	
Sample Date:		2/19/10		11/11/10		3/17/11		1/13/07		2/7/07		1/13/07		1/6/07		1/6/07	
Units:		µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv
Analyte	Method																
<b>Volatile Organic Compounds (VOCs)</b>		TO-15															
Carbon tetrachloride		< 1.3	< 0.20	NT	NT	NT	NT	0.75 J	0.12 J	0.94 J	0.15 J	0.69 J	0.11 J	0.52 J J+	0.082 J J+	< 1.3	< 0.20
1,1-Dichloroethane		< 0.81	< 0.20	< 0.81	< 0.20	< 0.53	< 0.13	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20
1,2-Dichloroethane		< 0.81	< 0.20	NT	NT	NT	NT	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20
1,1-Dichloroethylene		< 0.79	< 0.20	< 0.79	< 0.20	< 0.52	< 0.13	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20
cis-1,2-Dichloroethylene		< 0.79	< 0.20	< 0.79	< 0.20	< 0.37	< 0.094	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20
1,1,2,2-Tetrachloroethane		< 1.4	< 0.20	< 1.4	< 0.20	< 0.82	< 0.12	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20
Tetrachloroethylene (PCE)		< 1.4	< 0.20	< 1.4	< 0.20	< 0.95	< 0.14	3.2	0.47	< 1.4	< 0.20	2.1	0.31	< 1.4	< 0.20	< 1.4	< 0.20
1,1,1-Trichloroethane (TCA)		< 1.1	< 0.20	< 1.1	< 0.20	< 0.76	< 0.14	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20
Trichloroethylene (TCE)		< 1.1	< 0.20	< 1.1	< 0.20	< 0.70	< 0.13	0.54 J	0.10 J	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20

**General Notes:**

1. Analytes detected in at least one sample are reported here. For a complete list of analytes see the attached laboratory data sheets.
2. µg/m<sup>3</sup> = micrograms per cubic meter.
3. ppbv = parts per billion by volume.
4. "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit.
5. FD = Field Duplicate.
6. NT = Not Tested.
7. The samples collected in August 2009, November 2009, February 2010, November 2010, and March 2011 were collected over a 24-hour period.

**Qualifying Notes:**

- J The reported result is below the laboratory reporting limit and is estimated.
- J+ The reported result is estimated.



**Table 3-2. Chemical Testing Results - Indoor and Outdoor Air  
Phase V Status Report No. 5 and Remedial Monitoring Report No. 20**

Capuano Center  
150 Glen Street  
Somerville, Massachusetts

Sample Location: Sample ID:		Room 138															
		RM138		150 GLEN-ROOM 138		150 GLEN-ROOM 138		150 GLEN-ROOM 138		150 GLEN-ROOM 138 (Alpha duplicate)		150 GLEN-RM 138		150 GLEN-RM 139 (FD-Room 138)		150GLEN-ROOM 138	
Sample Date:		1/2/07		1/6/07		1/13/07		1/26/07		1/26/07		2/7/07		2/7/07		3/8/07	
Units:		µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv
Analyte	Method																
<b>Volatile Organic Compounds (VOCs)</b>	TO-15																
Carbon tetrachloride		< 1.3	< 0.20	0.49 J J+	0.078 J J+	0.82 J	0.13 J	0.82 J	0.13 J	< 0.126	< 0.020	0.75 J	0.12 J	0.52 J	0.082 J	< 1.3	< 0.20
1,1-Dichloroethane		0.45 J	0.11 J	0.77 J J+	0.19 J J+	0.57 J	0.14 J	0.65 J	0.16 J	< 0.081	< 0.020	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20
1,2-Dichloroethane		< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.079	< 0.020	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20
1,1-Dichloroethylene		< 0.79	< 0.20	2.1 J+	0.54 J+	< 0.79	< 0.20	< 0.79	< 0.20	< 0.079	< 0.020	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20
cis-1,2-Dichloroethylene		< 0.79	< 0.20	0.83 J+	0.21 J+	< 0.79	< 0.20	< 0.79	< 0.20	< 0.0819	< 0.020	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20
1,1,2,2-Tetrachloroethane		< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20
Tetrachloroethylene (PCE)		14	2.0	60 J+	8.8 J+	20	3.0	20	3.0	32.6	4.8	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20
1,1,1-Trichloroethane (TCA)		< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 0.109	< 0.020	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20
Trichloroethylene (TCE)		2.3	0.42	7 J+	1.3 J+	3.1	0.57	3.3	0.61	4.26	0.794	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20

**General Notes:**

1. Analytes detected in at least one sample are reported here. For a complete list of analytes see the attached laboratory data sheets.
2. µg/m<sup>3</sup> = micrograms per cubic meter.
3. ppbv = parts per billion by volume.
4. "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit.
5. FD = Field Duplicate.
6. NT = Not Tested.
7. The samples collected in August 2009, November 2009, February 2010, November 2010, and March 2011 were collected over a 24-hour period.

**Qualifying Notes:**

- J The reported result is below the laboratory reporting limit and is estimated.
- J+ The reported result is estimated.



**Table 3-2. Chemical Testing Results - Indoor and Outdoor Air  
Phase V Status Report No. 5 and Remedial Monitoring Report No. 20  
Capuano Center  
150 Glen Street  
Somerville, Massachusetts**

Sample Location: Sample ID:		Room 138 (continued)															
		150GLEN-ROOM 139 (FD-Room 138)		150 GLEN-ROOM 138		150GLEN-ROOM 139 (FD-Room 138)		150 GLEN-RM 138		150GLEN-ROOM 139 (FD-Room 138)		150GLEN-RM138		150GLEN-ROOM 139 (FD-Room 138)		150GLEN-RM138	
Sample Date:		3/8/07		4/20/07		4/20/07		5/17/07		5/17/07		7/30/07		7/30/07		9/10/07	
Units:		µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv
Analyte	Method																
<b>Volatile Organic Compounds (VOCs)</b>	TO-15																
Carbon tetrachloride		< 1.3	< 0.20	< 1.3	< 0.20	< 1.3	< 0.20	< 1.3	< 0.20	< 1.3	< 0.20	0.61 J	0.097 J	0.69 J	0.11 J	0.69 J	0.11 J
1,1-Dichloroethane		< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81 J+	< 0.20 J+	< 0.81 J+	< 0.20 J+
1,2-Dichloroethane		< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81 J+	< 0.20 J+	< 0.81 J+	< 0.20 J+
1,1-Dichloroethylene		< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79 J+	< 0.20 J+	< 0.79 J+	< 0.20 J+
cis-1,2-Dichloroethylene		< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79 J+	< 0.20 J+	< 0.79 J+	< 0.20 J+
1,1,2,2-Tetrachloroethane		< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4 J+	< 0.20 J+	< 1.4 J+	< 0.20 J+	< 1.4	< 0.20
Tetrachloroethylene (PCE)		< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	1.2 J	0.17 J	1.1 J	0.16 J	< 1.4 J+	< 0.20 J+
1,1,1-Trichloroethane (TCA)		< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1 J+	< 0.20 J+	< 1.1 J+	< 0.20 J+
Trichloroethylene (TCE)		< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1 J+	< 0.20 J+	< 1.1 J+	< 0.20 J+

**General Notes:**

1. Analytes detected in at least one sample are reported here. For a complete list of analytes see the attached laboratory data sheets.
2. µg/m<sup>3</sup> = micrograms per cubic meter.
3. ppbv = parts per billion by volume.
4. "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit.
5. FD = Field Duplicate.
6. NT = Not Tested.
7. The samples collected in August 2009, November 2009, February 2010, November 2010, and March 2011 were collected over a 24-hour period.

**Qualifying Notes:**

- J The reported result is below the laboratory reporting limit and is estimated.
- J+ The reported result is estimated.



**Table 3-2. Chemical Testing Results - Indoor and Outdoor Air  
Phase V Status Report No. 5 and Remedial Monitoring Report No. 20**

Capuano Center  
150 Glen Street  
Somerville, Massachusetts

Sample Location:		Room 138 (continued)															
Sample ID:		150GLEN-ROOM 139 (FD-Room 138)		150GLEN-RM138		150GLEN-RM139 (FD-Room 138)		150GLEN-RM239 (FD-Room 138)		150GLEN-RM238 (FD-Room 138)		150GLEN-RM138		150GLEN-ROOM 139 (FD-Room 138)		150GLEN-RM238 (FD-Room 138)	
Sample Date:		9/10/07		10/8/07		10/8/07		10/8/07		10/8/07		10/14/07		10/14/07		10/14/07	
Units:		µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv
Analyte	Method																
<b>Volatile Organic Compounds (VOCs)</b>	TO-15																
Carbon tetrachloride		0.69 J	0.11 J	0.69 J	0.11 J	0.88 J	0.14 J	0.82 J	0.13 J	< 1.3	< 0.20	< 1.3	< 0.20	< 1.3	< 0.20	0.59 J	0.094 J
1,1-Dichloroethane		< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20
1,2-Dichloroethane		< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20
1,1-Dichloroethylene		< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20
cis-1,2-Dichloroethylene		< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20
1,1,2,2-Tetrachloroethane		< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20
Tetrachloroethylene (PCE)		6.5	0.96	< 1.4	< 0.20	1.5	0.22	1.2 J	0.18 J	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20
1,1,1-Trichloroethane (TCA)		< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20
Trichloroethylene (TCE)		< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20

**General Notes:**

1. Analytes detected in at least one sample are reported here. For a complete list of analytes see the attached laboratory data sheets.
2. µg/m<sup>3</sup> = micrograms per cubic meter.
3. ppbv = parts per billion by volume.
4. "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit.
5. FD = Field Duplicate.
6. NT = Not Tested.
7. The samples collected in August 2009, November 2009, February 2010, November 2010, and March 2011 were collected over a 24-hour period.

**Qualifying Notes:**

- J The reported result is below the laboratory reporting limit and is estimated.
- J+ The reported result is estimated.





**Table 3-2. Chemical Testing Results - Indoor and Outdoor Air  
Phase V Status Report No. 5 and Remedial Monitoring Report No. 20  
Capuano Center  
150 Glen Street  
Somerville, Massachusetts**

Sample Location:		Room 138 (continued)															
Sample ID:		150GLEN-RM239 (FD-Room 138)		150GLEN-RM138		150GLEN-RM139 (FD-Room 138)		150GLEN-RM138		150GLEN-RM139 (FD-Room 138)		150GLEN-RM138		150GLEN-RM139 (FD-Room 138)		150GLEN-RM138	
Sample Date:		10/14/07		11/15/07		11/15/07		12/13/07		12/13/07		1/21/08		1/21/08		2/19/08	
Units:		µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv
Analyte	Method																
<b>Volatile Organic Compounds (VOCs)</b>	TO-15																
Carbon tetrachloride		0.62 J	0.099 J	0.69 J	0.11 J	0.69 J	0.11 J	0.57 J	0.091 J	< 1.3	< 0.20	< 1.3	< 0.20	< 1.3	< 0.20	< 1.3	< 0.20
1,1-Dichloroethane		< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20
1,2-Dichloroethane		< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20
1,1-Dichloroethylene		< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20
cis-1,2-Dichloroethylene		< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20
1,1,2,2-Tetrachloroethane		< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20
Tetrachloroethylene (PCE)		< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20
1,1,1-Trichloroethane (TCA)		< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20
Trichloroethylene (TCE)		< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20

**General Notes:**

1. Analytes detected in at least one sample are reported here. For a complete list of analytes see the attached laboratory data sheets.
2. µg/m<sup>3</sup> = micrograms per cubic meter.
3. ppbv = parts per billion by volume.
4. "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit.
5. FD = Field Duplicate.
6. NT = Not Tested.
7. The samples collected in August 2009, November 2009, February 2010, November 2010, and March 2011 were collected over a 24-hour period.

**Qualifying Notes:**

- J The reported result is below the laboratory reporting limit and is estimated.
- J+ The reported result is estimated.



**Table 3-2. Chemical Testing Results - Indoor and Outdoor Air  
Phase V Status Report No. 5 and Remedial Monitoring Report No. 20**  
Capuano Center  
150 Glen Street  
Somerville, Massachusetts

Sample Location: Sample ID: Sample Date: Units:		Room 138 (continued)															
		150GLEN-RM139 (FD-Room 138)		150GLEN-RM138		150GLEN-RM139 (FD-Room 138)		150GLEN-RM138		150GLEN-RM139 (FD-Room 138)		150GLEN-RM138		150GLEN-RM139 (FD-Room 138)		150GLEN-RM138	
		2/19/08		2/22/08		2/22/08		3/17/08		3/17/08		4/21/08		4/21/08		8/18/08	
		µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv
Analyte	Method																
<b>Volatile Organic Compounds (VOCs)</b>	TO-15																
Carbon tetrachloride		< 1.3	< 0.20	0.69 J	0.11 J	< 1.3	< 0.20	< 1.3	< 0.20	< 1.3	< 0.20	0.75 J	0.12 J	0.69 J	0.11 J	0.69 J	0.11 J
1,1-Dichloroethane		< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20
1,2-Dichloroethane		< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20
1,1-Dichloroethylene		< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20
cis-1,2-Dichloroethylene		< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20
1,1,2,2-Tetrachloroethane		< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20
Tetrachloroethylene (PCE)		1.8	0.27	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20
1,1,1-Trichloroethane (TCA)		< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20
Trichloroethylene (TCE)		< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20

**General Notes:**

1. Analytes detected in at least one sample are reported here. For a complete list of analytes see the attached laboratory data sheets.
2. µg/m<sup>3</sup> = micrograms per cubic meter.
3. ppbv = parts per billion by volume.
4. "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit.
5. FD = Field Duplicate.
6. NT = Not Tested.
7. The samples collected in August 2009, November 2009, February 2010, November 2010, and March 2011 were collected over a 24-hour period.

**Qualifying Notes:**

- J The reported result is below the laboratory reporting limit and is estimated.
- J+ The reported result is estimated.



**Table 3-2. Chemical Testing Results - Indoor and Outdoor Air  
Phase V Status Report No. 5 and Remedial Monitoring Report No. 20**  
Capuano Center  
150 Glen Street  
Somerville, Massachusetts

Sample Location: Sample ID: Sample Date: Units:		Room 138 (continued)															
		150GLEN-RM139 (FD-Room 138)		150GLEN-RM138		150GLEN-RM139 (FD-Room 138)		150GLEN-RM138		150GLEN-RM139 (FD-Room 138)		150GLEN-RM138		150GLEN-RM139 (FD-Room 138)		150GLEN-RM138	
		8/18/08		11/24/08		11/24/08		3/2/09		3/2/09		8/27/09		8/27/09		11/11/09	
		µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv
Analyte	Method																
<b>Volatile Organic Compounds (VOCs)</b>	TO-15																
Carbon tetrachloride		0.63 J	0.10 J	0.62 J	0.098 J	0.63 J	0.10 J	< 1.3	< 0.20	< 1.3	< 0.20	< 1.3	< 0.20	< 1.3	< 0.20	< 1.3	< 0.20
1,1-Dichloroethane		< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20
1,2-Dichloroethane		< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20
1,1-Dichloroethylene		< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20
cis-1,2-Dichloroethylene		< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20
1,1,2,2-Tetrachloroethane		< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20
Tetrachloroethylene (PCE)		< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20
1,1,1-Trichloroethane (TCA)		< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20
Trichloroethylene (TCE)		< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20

**General Notes:**

1. Analytes detected in at least one sample are reported here. For a complete list of analytes see the attached laboratory data sheets.
2. µg/m<sup>3</sup> = micrograms per cubic meter.
3. ppbv = parts per billion by volume.
4. "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit.
5. FD = Field Duplicate.
6. NT = Not Tested.
7. The samples collected in August 2009, November 2009, February 2010, November 2010, and March 2011 were collected over a 24-hour period.

**Qualifying Notes:**

- J The reported result is below the laboratory reporting limit and is estimated.
- J+ The reported result is estimated.



**Table 3-2. Chemical Testing Results - Indoor and Outdoor Air  
Phase V Status Report No. 5 and Remedial Monitoring Report No. 20**

Capuano Center  
150 Glen Street  
Somerville, Massachusetts

Sample Location:		Room 138 (continued)													
Sample ID:		150GLEN-RM139 (FD-Room 138)		150GLEN-RM138		150GLEN-RM139 (FD-Room 138)		150GLEN-RM138		150GLEN-RM139 (FD-Room 138)		150GLEN-RM138		150GLEN-RM139 (FD-Room 138)	
Sample Date:		11/11/09		2/19/10		2/19/10		11/11/10		11/11/10		3/17/11		3/17/11	
Units:		µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv
Analyte	Method														
<b>Volatile Organic Compounds (VOCs)</b>	TO-15														
Carbon tetrachloride		< 1.3	< 0.20	< 1.3	< 0.20	< 1.3	< 0.20	NT	NT	NT	NT	NT	NT	NT	NT
1,1-Dichloroethane		< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.53	< 0.13	< 0.53	< 0.13
1,2-Dichloroethane		< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	NT	NT	NT	NT	NT	NT	NT	NT
1,1-Dichloroethylene		< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.52	< 0.13	< 0.52	< 0.13
cis-1,2-Dichloroethylene		< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.37	< 0.094	< 0.37	< 0.094
1,1,2,2-Tetrachloroethane		< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 0.82	< 0.12	< 0.82	< 0.12
Tetrachloroethylene (PCE)		< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 0.95	< 0.14	< 0.95	< 0.14
1,1,1-Trichloroethane (TCA)		< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 0.76	< 0.14	< 0.76	< 0.14
Trichloroethylene (TCE)		< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 0.70	< 0.13	< 0.70	< 0.13

**General Notes:**

1. Analytes detected in at least one sample are reported here. For a complete list of analytes see the attached laboratory data sheets.
2. µg/m<sup>3</sup> = micrograms per cubic meter.
3. ppbv = parts per billion by volume.
4. "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit.
5. FD = Field Duplicate.
6. NT = Not Tested.
7. The samples collected in August 2009, November 2009, February 2010, November 2010, and March 2011 were collected over a 24-hour period.

**Qualifying Notes:**

- J The reported result is below the laboratory reporting limit and is estimated.
- J+ The reported result is estimated.





**Table 3-2. Chemical Testing Results - Indoor and Outdoor Air**  
**Phase V Status Report No. 5 and Remedial Monitoring Report No. 20**  
 Capuano Center  
 150 Glen Street  
 Somerville, Massachusetts

Sample Location: Sample ID:  Sample Date: Units:		Room 141															
		150 GLEN-ROOM 141		150GLEN-ROOM 141		150 GLEN-ROOM 141		150 GLEN-RM 141		150GLEN-RM141		150GLEN-RM141		150GLEN-RM141		150GLEN-RM141	
		1/6/07		3/8/07		4/20/07		5/17/07		7/30/07		9/10/07		10/8/07		10/14/07	
		µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv
Analyte	Method																
<b>Volatile Organic Compounds (VOCs)</b>	TO-15																
Carbon tetrachloride		0.45 J J+	0.071 J J+	< 1.3	< 0.20	< 1.3	< 0.20	< 1.3	< 0.20	< 1.3 J+	< 0.20 J+	0.75 J	0.12 J	< 1.3	< 0.20	< 1.3	< 0.20
1,1-Dichloroethane		< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81 J+	< 0.20 J+	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20
1,2-Dichloroethane		< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81 J+	< 0.20 J+	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20
1,1-Dichloroethylene		< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79 J+	< 0.20 J+	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20
cis-1,2-Dichloroethylene		< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79 J+	< 0.20 J+	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20
1,1,2,2-Tetrachloroethane		< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4 J+	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20
Tetrachloroethylene (PCE)		< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4 J+	< 0.20 J+	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20
1,1,1-Trichloroethane (TCA)		< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1 J+	< 0.20 J+	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20
Trichloroethylene (TCE)		< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1 J+	< 0.20 J+	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20

**General Notes:**

1. Analytes detected in at least one sample are reported here. For a complete list of analytes see the attached laboratory data sheets.
2. µg/m<sup>3</sup> = micrograms per cubic meter.
3. ppbv = parts per billion by volume.
4. "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit.
5. FD = Field Duplicate.
6. NT = Not Tested.
7. The samples collected in August 2009, November 2009, February 2010, November 2010, and March 2011 were collected over a 24-hour period.

**Qualifying Notes:**

- J The reported result is below the laboratory reporting limit and is estimated.
- J+ The reported result is estimated.



**Table 3-2. Chemical Testing Results - Indoor and Outdoor Air  
Phase V Status Report No. 5 and Remedial Monitoring Report No. 20  
Capuano Center  
150 Glen Street  
Somerville, Massachusetts**

Sample Location:		Room 141 (continued)															
Sample ID:		150GLEN-RM141		150GLEN-RM141		150GLEN-RM141		150GLEN-RM141		150GLEN-RM141		150GLEN-RM141		150GLEN-RM141		150GLEN-RM141	
Sample Date:		11/15/07		12/13/07		1/21/08		2/19/08		2/22/08		3/17/08		4/21/08		8/18/08	
Units:		µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv
Analyte	Method																
<b>Volatile Organic Compounds (VOCs)</b>	TO-15																
Carbon tetrachloride		0.69 J	0.11 J	< 1.3	< 0.20	< 1.3	< 0.20	< 1.3	< 0.20	0.69 J	0.11 J	< 1.3	< 0.20	0.69 J	0.11 J	0.60 J	0.096 J
1,1-Dichloroethane		< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20
1,2-Dichloroethane		< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20
1,1-Dichloroethylene		< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20
cis-1,2-Dichloroethylene		< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20
1,1,2,2-Tetrachloroethane		< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20
Tetrachloroethylene (PCE)		< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20
1,1,1-Trichloroethane (TCA)		< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20
Trichloroethylene (TCE)		< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	0.62 J	0.092 J

**General Notes:**

1. Analytes detected in at least one sample are reported here. For a complete list of analytes see the attached laboratory data sheets.
2. µg/m<sup>3</sup> = micrograms per cubic meter.
3. ppbv = parts per billion by volume.
4. "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit.
5. FD = Field Duplicate.
6. NT = Not Tested.
7. The samples collected in August 2009, November 2009, February 2010, November 2010, and March 2011 were collected over a 24-hour period.

**Qualifying Notes:**

- J The reported result is below the laboratory reporting limit and is estimated.
- J+ The reported result is estimated.



**Table 3-2. Chemical Testing Results - Indoor and Outdoor Air  
Phase V Status Report No. 5 and Remedial Monitoring Report No. 20**  
Capuano Center  
150 Glen Street  
Somerville, Massachusetts

Sample Location: Sample ID:  Sample Date: Units:		Room 141 (continued)												Room 142			
		150GLEN-RM141		150GLEN-RM141		150GLEN-RM141		150GLEN-RM141		150GLEN-RM141		150GLEN-RM141		RM142		150 GLEN-ROOM 142	
		11/24/08		3/2/09		8/27/09		2/19/10		11/11/10		3/17/11		1/2/07		1/6/07	
		µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv
Analyte	Method																
<b>Volatile Organic Compounds (VOCs)</b>	TO-15																
Carbon tetrachloride		0.63 J	0.10 J	< 1.3	< 0.20	< 1.3	< 0.20	< 1.3	< 0.20	NT	NT	NT	NT	< 1.3	< 0.20	0.52 J J+	0.083 J J+
1,1-Dichloroethane		< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.53	< 0.13	1.4	0.35	1.2 J+	0.29 J+
1,2-Dichloroethane		< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	NT	NT	NT	NT	< 0.81	< 0.20	< 0.81	< 0.20
1,1-Dichloroethylene		< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.52	< 0.13	0.87	0.22	2.5 J+	0.63 J+
cis-1,2-Dichloroethylene		< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.37	< 0.094	< 0.79	< 0.20	< 0.79	< 0.20
1,1,2,2-Tetrachloroethane		< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 0.82	< 0.12	< 1.4	< 0.20	< 1.4 J+	< 0.20 J+
Tetrachloroethylene (PCE)		< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 0.95	< 0.14	28	4.1	45 J+	6.6 J+
1,1,1-Trichloroethane (TCA)		< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 0.76	< 0.14	< 1.1	< 0.20	0.33 J J+	0.061 J J+
Trichloroethylene (TCE)		0.62 J	0.092 J	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 0.70	< 0.13	3.7	0.69	5.4 J+	1 J+

**General Notes:**

1. Analytes detected in at least one sample are reported here. For a complete list of analytes see the attached laboratory data sheets.
2. µg/m<sup>3</sup> = micrograms per cubic meter.
3. ppbv = parts per billion by volume.
4. "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit.
5. FD = Field Duplicate.
6. NT = Not Tested.
7. The samples collected in August 2009, November 2009, February 2010, November 2010, and March 2011 were collected over a 24-hour period.

**Qualifying Notes:**

- J The reported result is below the laboratory reporting limit and is estimated.
- J+ The reported result is estimated.



**Table 3-2. Chemical Testing Results - Indoor and Outdoor Air  
Phase V Status Report No. 5 and Remedial Monitoring Report No. 20  
Capuano Center  
150 Glen Street  
Somerville, Massachusetts**

Sample Location: Sample ID:		Room 142 (continued)															
		150 GLEN-RM 142		150GLEN-ROOM 142		150 GLEN-ROOM 142		150 GLEN-RM 142		150GLEN-RM142		150GLEN-RM142		150GLEN-RM142		150GLEN-RM142	
Sample Date: Units:		2/7/07		3/8/07		4/20/07		5/17/07		7/30/07		9/10/07		10/8/07		10/14/07	
		$\mu\text{g}/\text{m}^3$	ppbv	$\mu\text{g}/\text{m}^3$	ppbv	$\mu\text{g}/\text{m}^3$	ppbv	$\mu\text{g}/\text{m}^3$	ppbv	$\mu\text{g}/\text{m}^3$	ppbv	$\mu\text{g}/\text{m}^3$	ppbv	$\mu\text{g}/\text{m}^3$	ppbv	$\mu\text{g}/\text{m}^3$	ppbv
Analyte	Method																
<b>Volatile Organic Compounds (VOCs)</b>	TO-15																
Carbon tetrachloride		0.82 J	0.13 J	< 1.3	< 0.20	< 1.3	< 0.20	< 1.3	< 0.20	0.63 J	0.10 J	0.75 J	0.12 J	< 1.3	< 0.20	< 1.3	< 0.20
1,1-Dichloroethane		< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20
1,2-Dichloroethane		< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	1.0	0.25	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20
1,1-Dichloroethylene		< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20
cis-1,2-Dichloroethylene		< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20
1,1,2,2-Tetrachloroethane		< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20
Tetrachloroethylene (PCE)		< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20
1,1,1-Trichloroethane (TCA)		< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20
Trichloroethylene (TCE)		< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20

**General Notes:**

1. Analytes detected in at least one sample are reported here. For a complete list of analytes see the attached laboratory data sheets.
2.  $\mu\text{g}/\text{m}^3$  = micrograms per cubic meter.
3. ppbv = parts per billion by volume.
4. "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit.
5. FD = Field Duplicate.
6. NT = Not Tested.
7. The samples collected in August 2009, November 2009, February 2010, November 2010, and March 2011 were collected over a 24-hour period.

**Qualifying Notes:**

- J The reported result is below the laboratory reporting limit and is estimated.
- J+ The reported result is estimated.





**Table 3-2. Chemical Testing Results - Indoor and Outdoor Air  
Phase V Status Report No. 5 and Remedial Monitoring Report No. 20**  
Capuano Center  
150 Glen Street  
Somerville, Massachusetts

Sample Location:		Room 142 (continued)															
		150GLEN-RM142		150GLEN-RM142		150GLEN-RM142		150GLEN-RM142		150GLEN-RM142		150GLEN-RM142		150GLEN-RM142		150GLEN-RM142	
Sample ID:		11/15/07		12/13/07		1/21/08		2/19/08		2/22/08		3/17/08		4/21/08		8/18/08	
Sample Date:		Units:		µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv
Analyte	Method																
<b>Volatile Organic Compounds (VOCs)</b>	TO-15																
Carbon tetrachloride		0.69 J	0.11 J	< 1.3	< 0.20	< 1.3	< 0.20	< 1.3	< 0.20	0.75 J	0.12 J	< 1.3	< 0.20	0.69 J	0.11 J	< 1.3	< 0.20
1,1-Dichloroethane		< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20
1,2-Dichloroethane		< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20
1,1-Dichloroethylene		< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20
cis-1,2-Dichloroethylene		< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20
1,1,1,2-Tetrachloroethane		< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20
Tetrachloroethylene (PCE)		< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20
1,1,1-Trichloroethane (TCA)		< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20
Trichloroethylene (TCE)		< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20

**General Notes:**

1. Analytes detected in at least one sample are reported here. For a complete list of analytes see the attached laboratory data sheets.
2. µg/m<sup>3</sup> = micrograms per cubic meter.
3. ppbv = parts per billion by volume.
4. "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit.
5. FD = Field Duplicate.
6. NT = Not Tested.
7. The samples collected in August 2009, November 2009, February 2010, November 2010, and March 2011 were collected over a 24-hour period.

**Qualifying Notes:**

- J The reported result is below the laboratory reporting limit and is estimated.
- J+ The reported result is estimated.



**Table 3-2. Chemical Testing Results - Indoor and Outdoor Air  
Phase V Status Report No. 5 and Remedial Monitoring Report No. 20  
Capuano Center  
150 Glen Street  
Somerville, Massachusetts**

Sample Location: Sample ID:  Sample Date: Units:		Room 142 (continued)													
		150GLEN-RM142		150GLEN-RM142		150GLEN-RM142		150GLEN-RM142		150GLEN-RM142		150GLEN-RM142		150GLEN-RM142	
		11/24/08		3/2/09		8/27/09		11/11/09		2/19/10		11/11/10		3/17/11	
		$\mu\text{g}/\text{m}^3$	ppbv	$\mu\text{g}/\text{m}^3$	ppbv	$\mu\text{g}/\text{m}^3$	ppbv	$\mu\text{g}/\text{m}^3$	ppbv	$\mu\text{g}/\text{m}^3$	ppbv	$\mu\text{g}/\text{m}^3$	ppbv	$\mu\text{g}/\text{m}^3$	ppbv
Analyte	Method														
<b>Volatile Organic Compounds (VOCs)</b>	TO-15														
Carbon tetrachloride		0.69 J	0.11 J	< 1.3	< 0.20	< 1.3	< 0.20	< 1.3	< 0.20	< 1.3	< 0.20	NT	NT	NT	NT
1,1-Dichloroethane		< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.53	< 0.13
1,2-Dichloroethane		< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	NT	NT	NT	NT
1,1-Dichloroethylene		< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.52	< 0.13
cis-1,2-Dichloroethylene		< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.37	< 0.094
1,1,2,2-Tetrachloroethane		< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 0.82	< 0.12
Tetrachloroethylene (PCE)		< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 0.95	< 0.14
1,1,1-Trichloroethane (TCA)		< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 0.76	< 0.14
Trichloroethylene (TCE)		< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 0.70	< 0.13

**General Notes:**

1. Analytes detected in at least one sample are reported here. For a complete list of analytes see the attached laboratory data sheets.
2.  $\mu\text{g}/\text{m}^3$  = micrograms per cubic meter.
3. ppbv = parts per billion by volume.
4. "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit.
5. FD = Field Duplicate.
6. NT = Not Tested.
7. The samples collected in August 2009, November 2009, February 2010, November 2010, and March 2011 were collected over a 24-hour period.

**Qualifying Notes:**

- J The reported result is below the laboratory reporting limit and is estimated.
- J+ The reported result is estimated.



**Table 3-2. Chemical Testing Results - Indoor and Outdoor Air  
Phase V Status Report No. 5 and Remedial Monitoring Report No. 20**  
Capuano Center  
150 Glen Street  
Somerville, Massachusetts

Sample Location: Sample ID: Sample Date: Units:		Room 144				Room 145				Room 146							
		150 GLEN-ROOM 144		150 GLEN-ROOM 144 (Alpha duplicate)		150 GLEN-ROOM 145		150 GLEN-ROOM 146A		150 GLEN-ROOM 146B		150 GLEN-ROOM 146B (FD-Room 146)		RM146		150 GLEN-ROOM 146	
		1/13/07		1/13/07		1/6/07		12/27/06		12/28/06		12/28/06		1/2/07		1/6/07	
		µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv
Analyte	Method																
<b>Volatile Organic Compounds (VOCs)</b>	TO-15																
Carbon tetrachloride		0.88 J	0.14 J	< 3.14	< 0.50	0.45 J J+	0.071 J J+	1.1 J	0.18 J	< 1.3	< 0.20	0.49 J	0.078 J	0.63 J	0.10 J	< 1.3	< 0.20
1,1-Dichloroethane		< 0.81	< 0.20	< 2.02	< 0.50	< 0.81	< 0.20	10	2.5	3.6	0.88	3.3	0.82	0.53 J	0.13 J	0.57 J J+	0.14 J J+
1,2-Dichloroethane		< 0.81	< 0.20	< 1.98	< 0.50	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20
1,1-Dichloroethylene		< 0.79	< 0.20	< 1.98	< 0.50	< 0.79	< 0.20	7.9	2.0	4.0	1.0	3.9	0.99	< 0.79	< 0.20	< 0.79	< 0.20
cis-1,2-Dichloroethylene		< 0.79	< 0.20	< 2.02	< 0.50	< 0.79	< 0.20	3.3	0.83	1.3	0.33	1.2	0.31	< 0.79	< 0.20	< 0.79	< 0.20
1,1,2,2-Tetrachloroethane		< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20
Tetrachloroethylene (PCE)		4.1	0.61	4.36	0.643	< 1.4	< 0.20	186	27.5	83.4	12.3	85.4	12.6	11	1.6	26 J+	3.8 J+
1,1,1-Trichloroethane (TCA)		< 1.1	< 0.20	< 2.72	< 0.50	< 1.1	< 0.20	2.1	0.38	0.82 J	0.15 J	0.71 J	0.13 J	< 1.1	< 0.20	< 1.1	< 0.20
Trichloroethylene (TCE)		1.3	0.24	< 2.68	< 0.50	< 1.1	< 0.20	37	6.8	10	1.9	11	2.1	1.7	0.32	3.0 J+	0.56 J+

**General Notes:**

- Analytes detected in at least one sample are reported here. For a complete list of analytes see the attached laboratory data sheets.
- µg/m<sup>3</sup> = micrograms per cubic meter.
- ppbv = parts per billion by volume.
- "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit.
- FD = Field Duplicate.
- NT = Not Tested.
- The samples collected in August 2009, November 2009, February 2010, November 2010, and March 2011 were collected over a 24-hour period.

**Qualifying Notes:**

- J The reported result is below the laboratory reporting limit and is estimated.
- J+ The reported result is estimated.



**Table 3-2. Chemical Testing Results - Indoor and Outdoor Air  
Phase V Status Report No. 5 and Remedial Monitoring Report No. 20  
Capuano Center  
150 Glen Street  
Somerville, Massachusetts**

Sample Location: Sample ID:		Room 146 (continued)															
		150 GLEN-RM 146		150GLEN-ROOM 146		150 GLEN-ROOM 146		150 GLEN-RM 146		150GLEN-RM146		150GLEN-RM146		150GLEN-RM146			
Sample Date: Units:		2/7/07		3/8/07		4/20/07		5/17/07		7/30/07		9/10/07		10/8/07		10/14/07	
		µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv
Analyte	Method																
<b>Volatile Organic Compounds (VOCs)</b>	TO-15																
Carbon tetrachloride		0.75 J	0.12 J	< 1.3	< 0.20	< 1.3	< 0.20	< 1.3	< 0.20	0.62 J	0.099 J	0.82 J	0.13 J	< 1.3	< 0.20	0.58 J	0.092 J
1,1-Dichloroethane		< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81 J+	< 0.20 J+	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20
1,2-Dichloroethane		< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81 J+	< 0.20 J+	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20
1,1-Dichloroethylene		< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79 J+	< 0.20 J+	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20
cis-1,2-Dichloroethylene		< 0.79	< 0.20	< 2.0	< 0.50	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79 J+	< 0.20 J+	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20
1,1,1,2-Tetrachloroethane		< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4 +	< 0.20 J+	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20
Tetrachloroethylene (PCE)		< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	1.0 J	0.15 J	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20
1,1,1-Trichloroethane (TCA)		< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1 J+	< 0.20 J+	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20
Trichloroethylene (TCE)		< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1 J+	< 0.20 J+	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20

**General Notes:**

- Analytes detected in at least one sample are reported here. For a complete list of analytes see the attached laboratory data sheets.
- µg/m<sup>3</sup> = micrograms per cubic meter.
- ppbv = parts per billion by volume.
- "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit.
- FD = Field Duplicate.
- NT = Not Tested.
- The samples collected in August 2009, November 2009, February 2010, November 2010, and March 2011 were collected over a 24-hour period.

**Qualifying Notes:**

- J The reported result is below the laboratory reporting limit and is estimated.
- J+ The reported result is estimated.





**Table 3-2. Chemical Testing Results - Indoor and Outdoor Air  
Phase V Status Report No. 5 and Remedial Monitoring Report No. 20  
Capuano Center  
150 Glen Street  
Somerville, Massachusetts**

Analyte		Method		Room 146 (continued)															
				Sample Location:		150GLEN-RM146		150GLEN-RM146		150GLEN-RM146		150GLEN-RM146		150GLEN-RM146		150GLEN-RM146		150GLEN-RM146	
				Sample ID:		150GLEN-RM146		150GLEN-RM146		150GLEN-RM146		150GLEN-RM146		150GLEN-RM146		150GLEN-RM146		150GLEN-RM146	
				Sample Date:		11/15/07		12/13/07		1/21/08		2/19/08		2/22/08		3/17/08		4/21/08	
Units:		µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv		
Volatile Organic Compounds (VOCs)		TO-15																	
Carbon tetrachloride		0.69 J	0.11 J	< 1.3	< 0.20	< 1.3	< 0.20	< 1.3	< 0.20	0.62 J	0.098 J	< 1.3	< 0.20	0.75 J	0.12 J	0.60 J	0.096 J		
1,1-Dichloroethane		< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20		
1,2-Dichloroethane		< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20		
1,1-Dichloroethylene		< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	0.49 J	0.12 J		
cis-1,2-Dichloroethylene		< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20		
1,1,2,2-Tetrachloroethane		< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20		
Tetrachloroethylene (PCE)		< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20		
1,1,1-Trichloroethane (TCA)		< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20		
Trichloroethylene (TCE)		< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20		

- General Notes:**
1. Analytes detected in at least one sample are reported here. For a complete list of analytes see the attached laboratory data sheets.
  2. µg/m<sup>3</sup> = micrograms per cubic meter.
  3. ppbv = parts per billion by volume.
  4. "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit.
  5. FD = Field Duplicate.
  6. NT = Not Tested.
  7. The samples collected in August 2009, November 2009, February 2010, November 2010, and March 2011 were collected over a 24-hour period.

- Qualifying Notes:**
- J The reported result is below the laboratory reporting limit and is estimated.
  - J+ The reported result is estimated.



**Table 3-2. Chemical Testing Results - Indoor and Outdoor Air  
Phase V Status Report No. 5 and Remedial Monitoring Report No. 20  
Capuano Center  
150 Glen Street  
Somerville, Massachusetts**

Sample Location: Sample ID:		Room 146 (continued)													
		150GLEN-RM146		150GLEN-RM146		150GLEN-RM146		150GLEN-RM146		150GLEN-RM146		150GLEN-RM146		150GLEN-RM146	
Sample Date: Units:		11/24/08		3/2/09		8/27/09		11/11/09		2/19/10		11/11/10		3/17/11	
		µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv
Analyte	Method														
<b>Volatile Organic Compounds (VOCs)</b>	TO-15														
Carbon tetrachloride		0.63 J	0.10 J	< 1.3	< 0.20	< 1.3	< 0.20	< 1.3	< 0.20	< 1.3	< 0.20	NT	NT	NT	NT
1,1-Dichloroethane		< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.53	< 0.13
1,2-Dichloroethane		< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	NT	NT	NT	NT
1,1-Dichloroethylene		< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.52	< 0.13
cis-1,2-Dichloroethylene		< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.37	< 0.094
1,1,2,2-Tetrachloroethane		< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 0.82	< 0.12
Tetrachloroethylene (PCE)		< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 0.95	< 0.14
1,1,1-Trichloroethane (TCA)		< 1.1	< 0.20	< 1.1	< 0.20	0.93 J	0.17 J	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 0.76	< 0.14
Trichloroethylene (TCE)		< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 0.70	< 0.13

**General Notes:**

1. Analytes detected in at least one sample are reported here. For a complete list of analytes see the attached laboratory data sheets.
2. µg/m<sup>3</sup> = micrograms per cubic meter.
3. ppbv = parts per billion by volume.
4. "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit.
5. FD = Field Duplicate.
6. NT = Not Tested.
7. The samples collected in August 2009, November 2009, February 2010, November 2010, and March 2011 were collected over a 24-hour period.

**Qualifying Notes:**

- J The reported result is below the laboratory reporting limit and is estimated.
- J+ The reported result is estimated.



**Table 3-2. Chemical Testing Results - Indoor and Outdoor Air  
Phase V Status Report No. 5 and Remedial Monitoring Report No. 20  
Capuano Center  
150 Glen Street  
Somerville, Massachusetts**

Sample Location: Sample ID:		Outside of School by Room 126 Window						Outside of School by Day Care Window						Downwind on Roof			
		150 GLEN-0-1A		150 GLEN-0-1B		150 GLEN-0-1A		150 GLEN-0-2A		150 GLEN-0-2B		150 GLEN-0-2A		150 GLEN-ROOF B		150 GLEN-ROOF B	
Sample Date: Units:		12/27/06		12/28/06		1/6/07		12/27/06		12/28/06		1/6/07		2/8/07		2/8/07	
		µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv
Analyte	Method																
<b>Volatile Organic Compounds (VOCs)</b>	TO-15																
Carbon tetrachloride		< 1.3	< 0.20	< 1.3	< 0.20	0.52 J J+	0.083 J J+	1.1 J	0.17 J	< 1.3	< 0.20	0.52 J J+	0.082 J J+	< 1.3	< 1.3	< 0.20	< 0.20
1,1-Dichloroethane		< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.81	< 0.20	< 0.20
1,2-Dichloroethane		< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.81	< 0.20	< 0.20
1,1-Dichloroethylene		< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.79	< 0.20	< 0.20
cis-1,2-Dichloroethylene		< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.79	< 0.20	< 0.20
1,1,2,2-Tetrachloroethane		< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 1.4	< 0.20	< 0.20
Tetrachloroethylene (PCE)		< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 1.4	< 0.20	< 0.20
1,1,1-Trichloroethane (TCA)		< 1.2	< 0.21	< 1.2	< 0.21	< 1.2	< 0.21	< 1.2	< 0.21	< 1.2	< 0.21	< 1.2	< 0.21	< 1.2	< 1.2	< 0.21	< 0.21
Trichloroethylene (TCE)		< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 1.1	< 0.20	< 0.20

**General Notes:**

1. Analytes detected in at least one sample are reported here. For a complete list of analytes see the attached laboratory data sheets.
2. µg/m<sup>3</sup> = micrograms per cubic meter.
3. ppbv = parts per billion by volume.
4. "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit.
5. FD = Field Duplicate.
6. NT = Not Tested.
7. The samples collected in August 2009, November 2009, February 2010, November 2010, and March 2011 were collected over a 24-hour period.

**Qualifying Notes:**

- J The reported result is below the laboratory reporting limit and is estimated.
- J+ The reported result is estimated.



**Table 3-2. Chemical Testing Results - Indoor and Outdoor Air  
Phase V Status Report No. 5 and Remedial Monitoring Report No. 20  
Capuano Center  
150 Glen Street  
Somerville, Massachusetts**

Sample Location: Sample ID:  Sample Date: Units:		Downwind on Roof (continued)															
		150GLEN-ROOF		150 GLEN-ROOF		150 GLEN-ROOF		150GLEN-ROOF		150GLEN-ROOF		150GLEN-ROOF		150GLEN-ROOF		150GLEN-ROOF	
		3/8/07		4/20/07		5/17/07		8/9/07		9/10/07		10/14/07		11/14/07		12/17/07	
		µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv
Analyte	Method																
<b>Volatile Organic Compounds (VOCs)</b>	TO-15																
Carbon tetrachloride		< 1.3	< 0.20	< 1.3	< 0.20	< 1.3	< 0.20	< 1.3	< 0.20	0.69 J	0.11 J	< 1.3	< 0.20	< 1.3	< 0.20	< 1.3	< 0.20
1,1-Dichloroethane		< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20
1,2-Dichloroethane		< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20
1,1-Dichloroethylene		< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20
cis-1,2-Dichloroethylene		< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20
1,1,2,2-Tetrachloroethane		< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20
Tetrachloroethylene (PCE)		< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	1.2 J	0.18 J	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20
1,1,1-Trichloroethane (TCA)		< 1.2	< 0.21	< 1.2	< 0.21	< 1.2	< 0.21	< 1.2	< 0.21	< 1.2	< 0.21	< 1.2	< 0.21	< 1.2	< 0.21	< 1.2	< 0.21
Trichloroethylene (TCE)		< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20

- General Notes:**
1. Analytes detected in at least one sample are reported here. For a complete list of analytes see the attached laboratory data sheets.
  2. µg/m<sup>3</sup> = micrograms per cubic meter.
  3. ppbv = parts per billion by volume.
  4. "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit.
  5. FD = Field Duplicate.
  6. NT = Not Tested.
  7. The samples collected in August 2009, November 2009, February 2010, November 2010, and March 2011 were collected over a 24-hour period.

- Qualifying Notes:**
- J The reported result is below the laboratory reporting limit and is estimated.
  - J+ The reported result is estimated.





**Table 4-1. Exposure Pathway Elimination Measure (EPEM) Status  
Phase V Status Report No. 5 and Remedial Monitoring Report No. 20  
50 Tufts Street  
Somerville, Massachusetts**

Property Address	EPEM Design Option	Date Completed or Last Modified	Date of Last Indoor Air Monitoring	Ventilation Fan(s) (Model No.) <sup>(a)</sup>	Number of Sub-Slab Vapor Extraction Points (SSDs)	Sub-slab Vapor Barrier - HDPE Liner	Sub-Slab Ventilation System - Geocomposite	Sub-Slab Vapor Trench	Foundation Wall Ventilation System - Geocomposite	New Basement Slab Installed	Crawlspace Vapor Barrier	Epoxy Vapor Barrier - Floor	Epoxy Vapor Barrier - Foundation Walls
91-93 Franklin Street	3	March, 2009	3/1/2012	-	-	Yes	Yes	-	-	Yes	-	Yes	Yes
95 Franklin Street	2/1 <sup>(a)</sup>	May, 2011	5/16/2013	GP-501	-	-	-	Yes	-	-	Yes	Yes	Yes
95R Franklin Street	2	December, 2007	3/8/2010	-	-	-	-	Yes	-	-	Yes	Yes	Yes
150 Glen Street	1	February, 2007	3/17/2011	Regenerative Blower	18	-	-	Yes	Yes	-	-	Yes	Yes
166-168 Glen Street	3	November, 2010	3/1/2012	-	-	Yes	Yes	-	-	Yes	Yes	Yes	Yes
9 Knowlton Street	1	January, 2010	5/21/2007	GP-501	5	-	-	-	-	-	-	-	-
13 Knowlton Street	1	January, 2010	2/1/2011	GP-501	4	-	-	-	-	-	-	-	-
17 Knowlton Street	3	March, 2009	3/7/2012	-	-	Yes	Yes	-	-	Yes	-	Yes	Yes
31-33 Knowlton Street	1	February, 2008	3/19/2010	HS-5000	7	-	-	-	-	-	-	-	-
32 Knowlton Street	3	May, 2009	3/8/2011	-	-	-	-	-	-	-	-	-	-
35-37 Knowlton Street	3/1 <sup>(a)</sup>	April, 2010	3/11/2011	GP-501	-	Yes	Yes	-	-	Yes	-	Yes	Yes
4 Morton Street	3	November, 2008	3/20/2012	-	-	Yes	Yes	-	-	Yes	-	Yes	Yes
10 Morton Street	3	March, 2009	3/5/2011	-	-	Yes	Yes	-	-	Yes	-	Yes	Yes
11 Morton Street	2	November, 2008	2/23/2010	-	-	-	-	Yes	Yes	-	-	Yes	Yes
12 Morton Street	3	March, 2008	11/19/2010	-	-	Yes	Yes	-	-	Yes	-	Yes	Yes
13 Morton Street	1	October, 2008	1/28/2010	GP-501	5	-	-	-	-	-	-	-	-
18 Morton Street	1	July, 2007	2/24/2011	GP-501	5	-	-	-	-	-	-	-	-
19-19A Morton Street	3	August, 2009	3/1/2012	-	-	-	-	-	-	-	-	-	-
23 Tufts Street	1	May, 2007	2/25/2010	GP-501	1	-	-	-	-	-	-	-	-
27 Tufts Street	3/1 <sup>(a)</sup>	May, 2011	5/23/2013	GP-501	-	Yes	Yes	-	-	Yes	Yes	Yes	Yes
50 Tufts Street	1	August, 2007	10/21/2011	Regenerative Blower	22	-	-	-	-	-	-	-	-
60 Tufts Street	1	April, 2009	2/5/2011	Regenerative Blower	14	-	-	-	-	-	-	-	-
103 Washington Street	1	July, 2007	NS	GP-501 and GP-201	3	-	-	-	-	-	-	-	-

**Footnotes:**

(a) An Option 2 or 3 EPEM was initially installed at these properties; however, a fan was added to the EPEM to improve performance. Therefore, these EPEMs consist of Option 1 with Option 2 or 3 EPEM elements.



**Table 5-1. Summary of SSDS Monitoring Events - 60 Tufts Street  
Phase V Status Report No. 5 and Remedial Monitoring Report No. 20  
50 Tufts Street  
Somerville, Massachusetts**

Monitoring Date	Monitoring Event per RMR Report Period	Type of Monitoring Event	SSDS Field Parameters Measured
6/21/2013	1	SSDS Monthly Monitoring	-Pressure readings and VOC concentrations at system influent/effluent and blower. -System flow rate.
7/31/2013	2	SSDS Monthly Monitoring	-Pressure readings and VOC concentrations at system influent/effluent and blower. -System flow rate.
10/8/2013	3	SSDS Monthly Monitoring	-Pressure readings and VOC concentrations at system influent/effluent and blower. -System flow rate.
11/25/2013	4	SSDS Monthly Monitoring	-Pressure readings and VOC concentrations at system influent/effluent and blower. -System flow rate.

**General Notes:**

1. SSDS = Sub-Slab Depressurization System.
2. RMR = Remedial Monitoring Report.
3. VOC = Volatile Organic Compound.
4. VOC measurements collected with a Thermo 580B or a Phocheck 1000+ calibrated to 100 ppm isobutylene gas.
5. Pressure readings collected using a Dwyer 475-000-FM manamoter.



**Table 6-1. Summary of SSDS Monitoring Events - 50 Tufts Street  
Phase V Status Report No. 5 and Remedial Monitoring Report No. 20  
50 Tufts Street  
Somerville, Massachusetts**

Monitoring Date	Monitoring Event per RMR Report Period	Type of Monitoring Event	SSDS Field Parameters Measured	Analytical Samples Collected (Yes/No)?
6/21/2013	1	SSDS Monthly Monitoring	-Pressure readings and VOC concentrations at each header pipe, the combined influent, and effluent pipes. -Pressure readings and VOC concentrations at carbon tanks. -System flow rate.	No
7/31/2013	2	SSDS Monthly Monitoring	-Pressure readings and VOC concentrations at each header pipe, the combined influent, and effluent pipes. -Pressure readings and VOC concentrations at carbon tanks. -System flow rate.	No
8/7/2013	3	SSDS Monthly Monitoring	-Pressure readings and VOC concentrations at each header pipe, the combined influent, and effluent pipes. -Pressure readings and VOC concentrations at carbon tanks. -System flow rate. -Carbon Change Out.	No
10/8/2013	4	SSDS Monthly Monitoring	-Pressure readings and VOC concentrations at each header pipe, the combined influent, and effluent pipes. -Pressure readings and VOC concentrations at carbon tanks. -System flow rate.	No
11/25/2013	5	SSDS Monthly Monitoring	-Pressure readings and VOC concentrations at each header pipe, the combined influent, and effluent pipes. -Pressure readings and VOC concentrations at carbon tanks. -System flow rate.	No

**General Notes:**

1. SSDS = Sub-Slab Depressurization System.
2. RMR = Remedial Monitoring Report.
3. VOC = Volatile Organic Compound.
4. VFD = Variable Flow Drive.
5. SVT/SVE = Soil Vapor Temporary Point/Soil Vapor Extraction.
6. VOC measurements collected with a Thermo 580B calibrated to 100 parts per million (ppm).
7. Pressure readings collected using a Dwyer 475-000-FM manometer.



**Table 3-2. Chemical Testing Results - Indoor and Outdoor Air  
Phase V Status Report No. 5 and Remedial Monitoring Report No. 20  
Capuano Center  
150 Glen Street  
Somerville, Massachusetts**

Sample Location: Sample ID:		Downwind on Roof (continued)															
		150GLEN-ROOF		150GLEN-ROOF		150GLEN-ROOF		150GLEN-ROOF		150GLEN-ROOF		150GLEN-ROOF		150GLEN-ROOF			
Sample Date: Units:		1/21/08		2/19/08		3/17/08		4/21/08		8/18/08		11/24/08		8/27/09		11/11/09	
		µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv
Analyte	Method																
<b>Volatile Organic Compounds (VOCs)</b>	TO-15																
Carbon tetrachloride		< 1.3	< 0.20	< 1.3	< 0.20	< 1.3	< 0.20	0.69 J	0.11 J	0.63 J	0.10 J	0.63 J	0.10 J	< 1.3	< 0.20	< 1.3	< 0.20
1,1-Dichloroethane		< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20
1,2-Dichloroethane		< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20	< 0.81	< 0.20
1,1-Dichloroethylene		< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20
cis-1,2-Dichloroethylene		< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20	< 0.79	< 0.20
1,1,2,2-Tetrachloroethane		< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20
Tetrachloroethylene (PCE)		< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20	< 1.4	< 0.20
1,1,1-Trichloroethane (TCA)		< 1.2	< 0.21	< 1.2	< 0.21	< 1.2	< 0.21	< 1.2	< 0.21	< 1.2	< 0.21	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20
Trichloroethylene (TCE)		< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20	< 1.1	< 0.20

**General Notes:**

1. Analytes detected in at least one sample are reported here. For a complete list of analytes see the attached laboratory data sheets.
2. µg/m<sup>3</sup> = micrograms per cubic meter.
3. ppbv = parts per billion by volume.
4. "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit.
5. FD = Field Duplicate.
6. NT = Not Tested.
7. The samples collected in August 2009, November 2009, February 2010, November 2010, and March 2011 were collected over a 24-hour period.

**Qualifying Notes:**

- J The reported result is below the laboratory reporting limit and is estimated.
- J+ The reported result is estimated.





**Table 7-1. Groundwater Elevations**  
**Phase V Status Report No. 5 and Remedial Monitoring Report No. 20**  
 50 Tufts Street  
 Somerville, Massachusetts

Monitoring Well ID	Well Screen Interval (ft bgs)	Gauging Date: Elevation of Measuring Point (ft NAVD)	5/15/2006		5/16/2006		5/23/2006		5/31/2006		7/24/2006		8/1/2006		8/3/2006		8/16/2006		9/29/2006	
			Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)
MW-1	unknown	25.90	9.69	16.21	9.53	16.37	10.9	15	11.39	14.51	--	--	--	--	--	--	11.9	14	--	--
MW-2	unknown	25.38	8.99	16.39	10.36	15.02	Dry	Dry	Dry	Dry	--	--	--	--	--	--	Dry	Dry	--	--
MW-3	unknown	25.31	8.88	16.43	9.32	15.99	11.16	14.15	12.71	12.6	--	--	--	--	--	--	13.73	11.58	--	--
MW-101	9-19	26.75	--	--	10.56	16.19	11.53	15.22	12.1	14.65	12.33	14.42	12.51	14.24	13.47	13.28	12.78	13.97	12.85	13.9
MW-102	6-16	18.89	--	--	6.62	12.27	6.86	12.03	7.44	11.45	7.93	10.96	8.16	10.73	9.11	9.78	8.51	10.38	8.68	10.21
MW-103	6-16	19.47	--	--	9.5	9.97	10.37	9.1	10.74	8.73	11.15	8.32	11.31	8.16	12.24	7.23	11.72	7.75	11.98	7.49
MW-104	5-15	17.67	--	--	--	--	7.93	9.74	8.89	8.78	9.06	8.61	9.39	8.28	10.29	7.38	9.87	7.8	9.95	7.72
MW-105	19-29	38.84	--	--	19.49	19.35	20.21	18.63	20.7	18.14	21.18	17.66	21.43	17.41	22.41	16.43	21.91	16.93	22.27	16.57
MW-106	9 - 19	26.33	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-107	2 - 12	14.63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-108	2 - 12	12.74	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-109	3 - 13	24.12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-110	3 - 13	15.58	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-111	4 - 14	18.95	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-112	3 - 10	18.16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-112a	4-19	17.78	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-113	10-20	26.16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-114	7-17	29.43	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-115	10-25	27.15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-116	5-15	13.45	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-117S	5 - 20	21.94	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-117T	35 - 45	21.87	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-117D	60 - 70	21.78	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-118S	3 - 14	15.52	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-118T	39.5 - 49.5	15.30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-118D	70 - 80	15.15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-119S	5 - 20	11.74	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-119T	42 - 47	11.67	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-120S	5 - 20	12.54	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-120D	28 - 38	12.45	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-121S	5 - 20	12.44	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-121D	32 - 47	12.81	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-122	4 - 16	16.42	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GEO-1	5 - 20	25.88	9.69	16.19	9.9	15.98	10.92	14.96	11.36	14.52	--	--	--	--	--	--	11.82	14.06	--	--
GEO-2	5 - 20	26.54	9.76	16.78	--	--	11.38	15.16	11.91	14.63	--	--	--	--	--	--	12.51	14.03	--	--
GEO-3	5 - 20	25.64	10.43	15.21	9.59	16.05	9.87	15.77	10.67	14.97	11.67	13.97	11.85	13.79	12.84	12.8	12.25	13.39	12.37	2.84
GEO-4	4 - 19	21.69	--	--	7.79	13.9	9.85	11.84	10.78	10.91	11.25	10.44	11.45	10.24	12.43	9.26	11.9	9.79	12.09	9.6
GEO-5	5 - 20	20.14	--	--	6.78	13.36	9.08	11.06	9.96	10.18	10.29	9.85	10.56	9.58	11.51	8.63	10.99	9.15	11.21	8.93
GEO-6	5 - 20	17.62	--	--	5.66	11.96	7.39	10.23	8.23	9.39	8.43	9.19	8.73	8.89	9.64	7.98	9.25	8.37	9.41	8.21
SH-1	9 - 14	29.55	10.15	19.4	11.4	18.15	Dry	Dry	Dry	Dry	--	--	--	--	--	--	Dry	Dry	--	--
SH-2	7 - 14	29.64	5.71	23.93	7.86	21.78	12.07	17.57	12.22	17.42	--	--	--	--	--	--	11.98	17.66	--	--
SH-3	8 - 13	29.66	7.54	22.12	8.56	21.1	12.73	16.93	12.96	16.7	--	--	--	--	--	--	Dry	Dry	--	--
SH-4	11 - 16	29.63	13.53	16.1	13.48	16.15	14.48	15.15	15.02	14.61	--	--	--	--	--	--	15.09	14.54	--	--
SH-5	8 - 13	29.63	Dry	Dry	--	--	12.99	16.64	13.03	16.6	--	--	--	--	--	--	Dry	Dry	--	--
SH-MW1	10 - 30	24.02	6.72	17.3	--	--	11.44	12.58	12.18	11.84	--	--	--	--	--	--	13.09	10.93	--	--
SH-MW2	10 - 25	24.27	9.33	14.94	--	--	12.05	12.22	12.69	11.58	--	--	--	--	--	--	13.38	10.89	--	--
SH-MW3	10 - 24	22.31	7.8	14.51	--	--	10.26	12.05	11.03	11.28	--	--	--	--	--	--	13	9.31	--	--
MW201	11-21	27.51	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW202	10.5-20.5	27.82	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW203	6-18	21.80	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

- General Notes:**
1. ft = feet.
  2. bgs = below ground surface.
  3. ID = identification.
  4. GW = groundwater.
  5. NAVD = North American Vertical Datum of 1988.
  6. The top of the PVC riser was used as the measuring point for depth to groundwater.
  7. "--" = Well not yet installed, abandoned, or not measured.



**Table 7-1. Groundwater Elevations**  
**Phase V Status Report No. 5 and Remedial Monitoring Report No. 20**  
 50 Tufts Street  
 Somerville, Massachusetts

Monitoring Well ID	Well Screen Interval (ft bgs)	Gauging Date: Elevation of Measuring Point (ft NAVD)	10/4/2006		11/14/2006		12/12/2006		1/16/2007		2/12/2007		3/14/2007		4/12/2007		5/29/2007		6/26/2007	
			Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)
MW-1	unknown	25.90	11.88	14.02	--	--	--	--	11.6	14.3	--	--	--	--	11.39	14.51	11.41	14.49	11.8	14.1
MW-2	unknown	25.38	--	--	--	--	--	--	Destroyed	Destroyed	--	--	--	--	--	--	--	--	--	--
MW-3	unknown	25.31	13.75	11.56	--	--	--	--	13.05	12.26	--	--	--	--	--	--	--	--	--	--
MW-101	9-19	26.75	12.76	13.99	12.25	14.5	12.57	14.18	12.4	14.35	12.81	13.94	12.34	14.41	12.11	14.64	12.17	14.58	12.62	14.13
MW-102	6-16	18.89	8.52	10.37	7.64	11.25	8.01	10.88	7.72	11.17	8.52	10.37	--	--	7.46	11.43	6.72	12.17	8.36	10.53
MW-103	6-16	19.47	11.92	7.55	11	8.47	11.21	8.26	10.88	8.59	11.74	7.73	11	8.47	10.66	8.81	10.81	8.66	11.47	8.0
MW-104	5-15	17.67	9.92	7.75	--	--	--	--	8.73	8.94	--	--	--	--	8.75	8.92	--	--	9.62	8.05
MW-105	19-29	38.84	22.18	16.66	21.16	17.68	21.76	17.08	21.46	17.38	22.03	16.81	21.56	17.28	20.88	17.96	20.86	17.98	21.55	17.29
MW-106	9 - 19	26.33	--	--	--	--	--	--	--	--	12.27	14.06	12.91	13.42	11.65	14.68	11.69	14.64	12.07	14.26
MW-107	2 - 12	14.63	--	--	--	--	--	--	--	--	4.54	10.09	4.5	10.13	4.49	10.14	4.46	10.17	4.48	10.15
MW-108	2 - 12	12.74	--	--	--	--	--	--	--	--	4.93	7.81	4.02	8.72	9.91	2.83	4.25	8.49	5.06	7.68
MW-109	3 - 13	24.12	--	--	--	--	--	--	--	--	12.07	12.05	11.27	12.85	10.27	13.85	10.73	13.39	11.76	12.36
MW-110	3 - 13	15.58	--	--	--	--	--	--	--	--	5.99	9.59	1.46	14.12	1.04	14.54	2.56	13.02	6.57	9.01
MW-111	4 - 14	18.95	--	--	--	--	--	--	--	--	11.38	7.57	10.62	8.33	10.65	8.3	10.68	8.27	11.11	7.84
MW-112	3 - 10	18.16	--	--	--	--	--	--	--	--	Dry	Dry	8.01	10.15	Dry	Dry	Dry	Dry	Dry	Dry
MW-112a	4-19	17.78	--	--	--	--	--	--	--	--	12.76	5.02	12.76	5.02	12.76	5.02	12.67	5.11	12.81	4.97
MW-113	10-20	26.16	--	--	--	--	--	--	--	--	--	--	11.66	14.5	11.44	14.72	11.51	14.65	11.99	14.17
MW-114	7-17	29.43	--	--	--	--	--	--	--	--	--	--	12.67	16.76	11.27	18.16	11.53	17.9	12.88	16.55
MW-115	10-25	27.15	--	--	--	--	--	--	--	--	--	--	17.19	9.96	16.21	10.94	16.63	10.52	17.42	9.73
MW-116	5-15	13.45	--	--	--	--	--	--	--	--	--	--	8.78	4.67	8.34	5.11	8.65	4.8	8.76	4.69
MW-117S	5 - 20	21.94	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-117T	35 - 45	21.87	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-117D	60 - 70	21.78	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-118S	3 - 14	15.52	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-118T	39.5 - 49.5	15.30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-118D	70 - 80	15.15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-119S	5 - 20	11.74	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-119T	42 - 47	11.67	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-120S	5 - 20	12.54	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-120D	28 - 38	12.45	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-121S	5 - 20	12.44	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-121D	32 - 47	12.81	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-122	4 - 16	16.42	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GEO-1	5 - 20	25.88	11.85	14.03	--	--	--	--	11.55	14.33	--	--	--	--	11.36	14.52	11.38	14.5	11.73	14.15
GEO-2	5 - 20	26.54	12.51	14.03	--	--	--	--	12.2	14.34	--	--	--	--	11.97	14.57	11.99	14.55	12.4	14.14
GEO-3	5 - 20	25.64	12.35	13.29	11.63	14.01	11.72	13.92	11.58	14.06	12.21	13.43	11.49	14.15	10.76	14.88	11.04	14.6	11.94	13.7
GEO-4	4 - 19	21.69	12.04	9.65	10.58	11.11	11.31	10.38	10.77	10.92	11.83	9.86	11.03	10.66	10.51	11.18	10.87	10.82	11.64	10.05
GEO-5	5 - 20	20.14	11.15	8.99	9.47	10.67	10.48	9.66	9.73	10.41	11.02	9.12	10.15	9.99	9.7	10.44	10.01	10.13	10.79	9.35
GEO-6	5 - 20	17.62	9.26	8.36	7.65	9.97	8.82	8.8	8.11	9.51	9.3	8.32	8.54	9.08	8.32	9.3	8.25	9.37	8.9	8.72
SH-1	9 - 14	29.55	Dry	Dry	--	--	--	--	Dry	Dry	--	--	--	--	--	--	--	--	--	--
SH-2	7 - 14	29.64	12	17.64	--	--	--	--	Dry	Dry	--	--	--	--	--	--	--	--	--	--
SH-3	8 - 13	29.66	Dry	Dry	--	--	--	--	Dry	Dry	--	--	--	--	--	--	--	--	--	--
SH-4	11 - 16	29.63	15.1	14.53	--	--	--	--	Dry	Dry	--	--	--	--	--	--	--	--	--	--
SH-5	8 - 13	29.63	Dry	Dry	--	--	--	--	Dry	Dry	--	--	--	--	--	--	--	--	--	--
SH-MW1	10 - 30	24.02	13.17	10.85	--	--	--	--	12.21	11.81	--	--	--	--	12.01	12.01	12.26	11.76	--	--
SH-MW2	10 - 25	24.27	13.41	10.86	--	--	--	--	12.73	11.54	--	--	--	--	12.61	11.66	12.74	11.53	13.25	11.02
SH-MW3	10 - 24	22.31	12.04	10.27	--	--	--	--	11.04	11.27	--	--	--	--	10.81	11.5	--	--	11.72	10.59
MW201	11-21	27.51	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW202	10.5-20.5	27.82	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW203	6-18	21.80	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

- General Notes:**
1. ft = feet.
  2. bgs = below ground surface.
  3. ID = identification.
  4. GW = groundwater.
  5. NAVD = North American Vertical Datum of 1988.
  6. The top of the PVC riser was used as the measuring point for depth to groundwater.
  7. "--" = Well not yet installed, abandoned, or not measured.





Geotechnical  
Environmental and  
Water Resources  
Engineering



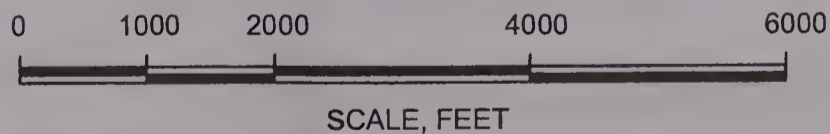
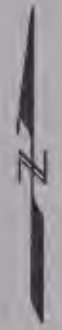


## Figures

---







This Image provided by MassGIS is from U.S.G.S. Topographic 7.5 X 15 Minute Series Boston North, MA Quadrangle, 1985. Datum is National Geodetic Vertical Datum (NGVD). Contour Interval is 3 Meters.



Phase V Status Report No. 5 and Remedial Monitoring Report No. 20  
 50 Tufts Street, Somerville, Massachusetts  
 UniFirst Corporation  
 Wilmington, Massachusetts



SITE LOCATION MAP

Project 04516-3

February 2014

Fig. 1-1



Table 7-1. Groundwater Elevations  
Phase V Status Report No. 5 and Remedial Monitoring Report No. 20  
50 Tufts Street  
Somerville, Massachusetts

Monitoring Well ID	Well Screen Interval (ft bgs)	Gauging Date: Elevation of Measuring Point (ft NAVD)	7/16/2007		8/22/2007		9/27/2007		10/23/2007		11/30/2007		1/9/2008		2/26/2008		3/18/2008		4/15/2008	
			Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)
MW-1	unknown	25.90	12.04	13.86	--	--	12.26	13.64	12.07	13.83	11.95	13.95	--	--	--	--	--	--	11.42	14.48
MW-2	unknown	25.38	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-3	unknown	25.31	13.94	11.37	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-101	9-19	26.75	12.85	13.9	13.03	13.72	13.17	13.58	12.91	13.84	13.82	12.93	12.11	14.64	--	--	11.85	14.9	12.02	14.73
MW-102	6-16	18.89	8.74	10.15	9.08	9.81	9.35	9.54	8.97	9.92	8.01	10.88	7.46	11.43	7.29	11.6	7.17	11.72	8.57	10.32
MW-103	6-16	19.47	11.92	7.55	12.3	7.17	12.63	6.84	--	12.18	7.29	10.74	8.73	10.51	8.96	10.5	8.97	10.82	8.65	
MW-104	5-15	17.67	10.09	7.58	10.36	7.31	10.61	7.06	10.31	7.36	10.07	7.6	8.86	8.81	8.61	9.06	8.48	9.19	9.84	7.83
MW-105	19-29	38.84	22.13	16.71	22.79	16.05	23.18	15.66	22.96	15.88	22.74	16.1	21.39	17.45	20.79	18.05	20.41	18.43	20.91	17.93
MW-106	9 - 19	26.33	12.33	14	12.48	13.85	12.61	13.72	12.39	13.94	12.27	14.06	11.71	14.62	11.51	14.82	11.38	14.95	12.54	13.79
MW-107	2 - 12	14.63	4.52	10.11	4.75	9.88	4.51	10.12	4.47	10.16	4.44	10.19	4.35	10.28	--	--	4.46	10.17	5.58	9.05
MW-108	2 - 12	12.74	6.59	6.15	6.25	6.49	6.28	6.46	5.86	6.88	4.74	8.0	3.71	9.03	4.61	8.13	3.68	9.06	3.91	8.83
MW-109	3 - 13	24.12	12.24	11.88	Dry	Dry	Dry	Dry	Dry	Dry	12.78	11.34	10.64	13.48	10.06	14.06	10.02	14.1	11.64	12.48
MW-110	3 - 13	15.58	7.17	8.41	7.86	7.72	8.37	7.21	6.92	8.66	3.34	12.24	--	--	0.79	14.79	1.12	14.46	1.57	14.01
MW-111	4 - 14	18.95	11.54	7.41	11.96	6.99	12.34	6.61	11.99	6.96	12.27	6.68	10.51	8.44	10.5	8.45	10.54	8.41	16.64	2.31
MW-112	3 - 10	18.16	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	--	--	--	--
MW-112a	4-19	17.78	12.88	4.9	--	--	12.95	4.83	12.8	4.98	--	--	12.43	5.35	12.52	5.26	12.61	5.17	13.71	4.07
MW-113	10-20	26.16	12.22	13.94	12.43	13.73	12.58	13.58	12.3	13.86	12.6	13.56	11.5	14.66	11.28	14.88	11.15	15.01	11.39	14.77
MW-114	7-17	29.43	15.57	13.86	14.24	15.19	14.84	14.59	14.66	14.77	14.31	15.12	12.08	17.35	11.11	18.32	10.75	18.68	12.42	17.01
MW-115	10-25	27.15	17.97	9.18	18.38	8.77	18.81	8.34	18.37	8.78	18.24	8.91	16.18	10.97	15.85	11.3	15.86	11.29	16.45	10.7
MW-116	5-15	13.45	--	--	8.85	4.6	8.91	4.54	8.83	4.62	--	--	8.6	4.85	8.68	4.77	8.77	4.68	8.85	4.6
MW-117S	5 - 20	21.94	15.27	6.67	15.7	6.24	16.03	5.91	16.2	5.74	15.95	5.99	13.97	7.97	13.52	8.42	13.5	8.44	14.22	7.72
MW-117T	35 - 45	21.87	15.95	5.92	16.38	5.49	16.81	5.06	16.91	4.96	16.58	5.29	14.58	7.29	13.97	7.9	13.9	7.97	14.67	7.2
MW-117D	60 - 70	21.78	15.87	5.91	16.26	5.52	16.69	5.09	16.77	5.01	16.44	5.34	14.46	7.32	13.86	7.92	13.81	7.97	14.51	7.27
MW-118S	3 - 14	15.52	11.64	3.88	9.84	5.68	10.2	5.32	9.42	6.1	9.4	6.12	8.55	6.97	8.34	7.18	8.4	7.12	10	5.52
MW-118T	39.5 - 49.5	15.30	10.36	4.94	10.51	4.79	10.74	4.56	10.68	4.62	10.5	4.8	9.93	5.37	9.49	5.81	9.53	5.77	9.83	5.47
MW-118D	70 - 80	15.15	10.18	4.97	10.32	4.83	10.55	4.6	10.49	4.66	10.25	4.9	9.55	5.6	9.3	5.85	9.35	5.8	9.64	5.51
MW-119S	5 - 20	11.74	--	--	4.91	6.83	4.99	6.75	4.93	6.81	4.85	6.89	4.63	7.11	4.6	7.14	4.56	7.18	4.91	6.83
MW-119T	42 - 47	11.67	--	--	6.45	5.22	6.8	4.87	6.72	4.95	6.57	5.1	5.82	5.85	5.63	6.04	5.78	5.89	5.97	5.7
MW-120S	5 - 20	12.54	--	--	5.25	7.29	5.35	7.19	4.71	7.83	4.62	7.92	3.51	9.03	4.06	8.48	4.0	8.54	5.1	7.44
MW-120D	28 - 38	12.45	--	--	--	--	4.21	8.24	3.94	8.51	3.48	8.97	3.17	9.28	2.96	9.49	3.11	9.34	3.26	9.19
MW-121S	5 - 20	12.44	--	--	--	--	--	--	7.36	5.08	7.41	5.03	7.24	5.2	7.36	5.08	7.41	5.03	9.39	3.05
MW-121D	32 - 47	12.81	--	--	--	--	--	--	7.92	4.89	7.75	5.06	6.95	5.86	6.83	5.98	6.91	5.9	7.31	5.5
MW-122	4 - 16	16.42	--	--	--	--	--	--	--	--	--	--	--	--	12.98	3.44	13	3.42	13.03	3.39
GEO-1	5 - 20	25.88	11.93	13.95	12.1	13.78	12.21	13.67	11.98	13.9	11.91	13.97	11.41	14.47	11.22	14.66	--	--	11.25	14.63
GEO-2	5 - 20	26.54	13.6	12.94	12.81	13.73	12.91	13.63	12.63	13.91	12.57	13.97	12.02	14.52	11.77	14.77	--	--	12.81	13.73
GEO-3	5 - 20	25.64	--	--	12.7	12.94	12.94	12.7	12.61	13.03	12.54	13.1	10.99	14.65	10.71	14.93	--	--	10.97	14.67
GEO-4	4 - 19	21.69	12.09	9.6	12.55	9.14	13.02	8.67	12.64	9.05	12.47	9.22	11.72	9.97	10.36	11.33	10.34	11.35	11.46	10.23
GEO-5	5 - 20	20.14	11.25	8.89	11.74	8.4	11.18	8.96	11.72	8.42	12.62	7.52	9.92	10.22	9.42	10.72	9.52	10.62	10.8	9.34
GEO-6	5 - 20	17.62	9.5	8.12	9.92	7.7	10.22	7.4	9.96	7.66	9.96	7.66	8.21	9.41	7.78	9.84	7.86	9.76	9.11	8.51
SH-1	9 - 14	29.55	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-2	7 - 14	29.64	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-3	8 - 13	29.66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-4	11 - 16	29.63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-5	8 - 13	29.63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-MW1	10 - 30	24.02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-MW2	10 - 25	24.27	13.48	10.79	13.72	10.55	14.04	10.23	13.68	10.59	13.85	10.42	12.77	11.5	12.49	11.78	12.46	11.81	13.62	10.65
SH-MW3	10 - 24	22.31	12.08	10.23	12.43	9.88	12.79	9.52	12.41	9.9	12.05	10.26	11.55	10.76	10.68	11.63	10.65	11.66	11.83	10.48
MW201	11-21	27.51	--	--	13.71	13.8	13.83	13.68	13.58	13.93	13.5	14.01	12.98	14.53	12.76	14.75	12.64	14.87	12.85	14.66
MW202	10.5-20.5	27.82	--	--	13.99	13.83	14.08	13.74	13.88	13.94	13.81	14.01	13.41	14.41	13.22	14.6	13.12	14.7	12.73	15.09
MW203	6-18	21.80	--	--	14.05	7.75	14.39	7.41	13.86	7.94	13.61	8.19	12.86	8.94	12.03	9.77	12	9.8	13.31	8.49

**General Notes:**

1. ft = feet.
2. bgs = below ground surface.
3. ID = identification.
4. GW = groundwater.
5. NAVD = North American Vertical Datum of 1988.
6. The top of the PVC riser was used as the measuring point for depth to groundwater.
7. "--" = Well not yet installed, abandoned, or not measured.



**Table 7-1. Groundwater Elevations**  
**Phase V Status Report No. 5 and Remedial Monitoring Report No. 20**  
 50 Tufts Street  
 Somerville, Massachusetts

Monitoring Well ID	Well Screen Interval (ft bgs)	Gauging Date:	5/19/2008		7/14/08		8/22/08		10/20/08		1/13/09		4/13/09		7/14/09		10/14/09		4/12/10	
			Elevation of Measuring Point (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)
MW-1	unknown	25.90	11.57	14.33	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-2	unknown	25.38	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-3	unknown	25.31	12.99	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-101	9-19	26.75	12.26	14.49	13.11	13.64	--	--	--	--	12.49	12.82	12.28	13.03	12.92	12.39	13.19	12.12	--	--
MW-102	6-16	18.89	7.9	10.99	9.51	9.38	--	--	12.61	14.14	12.07	14.68	11.91	14.84	12.2	14.55	12.37	14.38	11.61	15.14
MW-103	6-16	19.47	11.11	8.36	12.17	7.30	8.00	11.17	8.49	10.4	7.50	11.39	7.35	11.54	7.85	11.04	7.99	10.9	7.11	11.78
MW-104	5-15	17.67	9.25	8.42	9.67	8.00	9.06	8.61	11.87	7.6	10.73	8.74	10.57	8.9	11.07	8.4	11.34	8.13	10.47	9.00
MW-105	19-29	38.84	21.24	17.6	22.02	16.82	21.40	17.44	8.71	7.95	8.71	8.96	7.98	9.69	8.84	8.83	9.38	8.29	8.52	9.15
MW-106	9 - 19	26.33	11.72	14.61	11.68	14.65	11.73	14.60	21.8	17.04	20.9	17.94	20.65	18.19	21.4	17.44	21.8	17.04	19.84	19.00
MW-107	2 - 12	14.63	--	--	4.52	10.11	4.41	10.22	11.64	14.69	11.6	14.73	11.49	14.84	overflowing	--	overflowing	--	11.16	15.17
MW-108	2 - 12	12.74	3.99	8.75	5.16	7.58	4.44	8.30	4.49	10.14	4.5	10.13	4.47	10.16	overflowing	--	overflowing	--	4.31	10.32
MW-109	3 - 13	24.12	11.29	12.83	11.87	12.25	11.18	12.94	4.71	8.03	3.4	9.34	3.73	9.01	4.37	8.37	4.66	8.08	3.86	8.88
MW-110	3 - 13	15.58	2.5	13.08	--	--	3.59	11.99	11.73	12.39	10.43	13.69	10.4	13.72	11.11	13.01	--	--	9.88	14.24
MW-111	4 - 14	18.95	10.71	8.24	12.23	6.72	10.73	8.22	--	--	1.45	14.13	1.1	14.48	2.88	12.7	2.42	13.16	1.39	14.19
MW-112	3 - 10	18.16	--	--	--	--	10.73	8.22	11.37	7.58	10.55	8.4	10.56	8.39	10.67	8.28	10.41	8.54	10.57	8.38
MW-112a	4-19	17.78	12.77	5.01	13.56	4.22	12.93	4.85	8.33	9.83	--	--	--	--	--	--	--	--	--	--
MW-113	10-20	26.16	11.62	14.54	12.01	14.15	11.63	14.53	13.01	4.77	12.78	5.0	12.63	5.15	12.78	5.0	12.58	5.2	12.62	5.16
MW-114	7-17	29.43	12.3	17.13	13.24	16.19	12.21	17.22	11.99	14.17	11.41	14.75	11.23	14.93	11.56	14.6	11.73	14.43	10.93	15.23
MW-115	10-25	27.15	16.72	10.43	18.49	8.66	16.78	10.37	13.19	16.24	11.25	18.18	10.97	18.46	12.04	17.39	--	--	10.24	19.19
MW-116	5-15	13.45	8.88	4.57	9.09	4.36	9.01	4.44	17.8	9.35	16.35	10.8	15.4	11.75	16.58	10.57	17.4	9.75	16.43	10.72
MW-117S	5 - 20	21.94	14.6	7.34	14.99	6.95	13.90	8.04	--	--	8.94	--	8.87	4.58	8.97	4.48	8.76	4.69	8.85	4.6
MW-117T	35 - 45	21.87	14.94	6.93	15.68	6.19	15.27	6.60	14.67	7.27	14.02	7.92	14.38	7.56	14.66	7.28	14.75	7.19	13.32	8.62
MW-117D	60 - 70	21.78	14.89	6.89	15.61	6.17	14.67	7.11	15.26	6.61	14.45	7.42	14.43	7.44	15.03	6.84	15.26	6.61	13.56	8.31
MW-118S	3 - 14	15.52	9.38	6.14	9.64	5.88	8.48	7.04	15.27	6.51	14.3	7.48	14.26	7.52	14.89	6.89	15.13	6.65	13.48	8.3
MW-118T	39.5 - 49.5	15.30	9.94	5.36	10.35	4.95	9.92	5.38	9.05	6.47	8.41	7.11	8.7	6.82	9.43	6.09	9.01	6.51	8.31	7.21
MW-118D	70 - 80	15.15	9.8	5.35	10.11	5.04	9.70	5.45	10.19	5.11	9.73	5.57	9.64	5.66	9.92	5.38	9.99	5.31	9.49	5.81
MW-119S	5 - 20	11.74	4.92	6.82	4.94	6.80	6.08	5.66	5.11	5.16	9.54	5.61	9.47	5.68	9.74	5.41	9.73	5.42	9.29	5.86
MW-119T	42 - 47	11.67	6.1	5.57	6.52	5.15	4.52	7.15	9.99	5.16	9.54	5.61	9.47	5.68	9.74	5.41	9.73	5.42	9.29	5.86
MW-120S	5 - 20	12.54	4.57	7.97	5.18	7.36	4.61	7.93	6.08	5.66	4.41	7.33	4.21	7.53	4.47	7.27	4.33	7.41	4.33	7.41
MW-120D	28 - 38	12.45	3.44	9.01	3.82	8.63	2.90	9.55	4.08	7.66	4.41	7.33	4.21	7.53	4.47	7.27	4.33	7.41	4.33	7.41
MW-121S	5 - 20	12.44	7.29	5.15	9.21	3.23	7.70	4.74	4.01	8.53	4.03	8.51	3.85	8.69	4.31	8.23	3.58	8.96	3.98	8.56
MW-121D	32 - 47	12.81	7.27	5.54	7.64	5.17	7.30	5.51	3.32	9.13	3.18	9.27	3.11	9.34	3.31	9.14	3.29	9.16	3.04	9.41
MW-122	4 - 16	16.42	12.99	3.43	13.15	3.27	13.17	3.25	7.70	3.43	7.68	4.76	7.57	4.87	7.62	4.82	7.71	4.73	7.67	4.77
GEO-1	5 - 20	25.88	11.4	14.48	12.32	13.56	12.00	13.88	5.51	7.64	3.17	7.07	5.74	6.98	5.83	7.27	5.54	7.37	6.87	5.94
GEO-2	5 - 20	26.54	12.01	14.53	11.73	14.81	11.41	15.13	11.42	5.0	13.15	3.27	13.16	3.26	13.14	3.28	13.12	3.3	13.09	3.33
GEO-3	5 - 20	25.64	--	--	12.05	13.59	11.57	14.07	12.14	13.74	11.26	14.62	11.07	14.81	11.31	14.57	11.54	14.34	17.06	8.82
GEO-4	4 - 19	21.69	11.13	10.56	11.60	10.09	11.16	10.53	11.58	14.96	11.88	14.66	11.7	14.84	11.99	14.55	12.25	14.29	11.41	15.13
GEO-5	5 - 20	20.14	10.21	9.93	10.89	9.25	10.28	9.86	--	--	--	--	10.86	14.78	11.48	14.16	11.79	13.85	10.27	15.37
GEO-6	5 - 20	17.62	8.51	9.11	9.20	8.42	7.91	9.71	11.89	9.8	10.56	11.13	10.21	11.48	11.00	10.69	--	--	10.26	11.43
SH-1	9 - 14	29.55	--	--	--	--	--	--	11.79	8.35	9.70	10.44	9.30	10.84	10.08	10.06	10.44	9.7	9.48	10.66
SH-2	7 - 14	29.64	--	--	--	--	--	--	10.95	6.67	8.02	9.6	7.48	10.14	8.18	9.44	8.66	8.96	7.62	10
SH-3	8 - 13	29.66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-4	11 - 16	29.63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-5	8 - 13	29.63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-MW1	10 - 30	24.02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-MW2	10 - 25	24.27	12.89	11.38	11.83	12.44	12.92	11.35	--	--	--	--	--	--	--	--	--	--	--	--
SH-MW3	10 - 24	22.31	11.21	11.1	13.27	9.04	11.30	11.01	11.89	9.8	10.56	11.13	10.21	11.48	11.00	10.69	--	--	10.26	11.43
MW201	11-21	13.94	13.94	13.57	13.31	14.2	13.00	14.51	12.49	9.82	10.87	11.44	10.52	11.79	11.12	11.19	11.46	10.85	12.39	9.92
MW202	10.5-20.5	27.82	13.37	14.45	13.68	14.14	13.41	14.41	13.00	14.64	13.27	14.24	12.69	14.82	12.94	14.57	13.09	14.42	12.42	15.09
MW203	6-18	21.80	12.68	9.12	13.15	8.65	12.55	9.25	13.41	14.53	12.82	15	13.15	14.67	13.33	14.49	13.55	14.27	12.94	14.88

- General Notes:**
1. ft = feet.
  2. bgs = below ground surface.
  3. ID = identification.
  4. GW = groundwater.
  5. NAVD = North American Vertical Datum of 1988.
  6. The top of the PVC riser was used as the measuring point for depth to groundwater.
  7. "--" = Well not yet installed, abandoned, or not measured.



**Table 7-1. Groundwater Elevations**  
**Phase V Status Report No. 5 and Remedial Monitoring Report No. 20**  
 50 Tufts Street  
 Somerville, Massachusetts

Monitoring Well ID	Well Screen Interval (ft bgs)	Gauging Date:		10/27/10		4/20/11		11/16/11		4/16/12		11/12/12		4/23/13		11/18/13	
		Elevation of Measuring Point (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)
MW-1	unknown	25.90	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-2	unknown	25.38	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-3	unknown	25.31	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-101	9-19	26.75	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-102	6-16	18.89	--	--	11.73	15.02	--	--	--	--	--	--	--	--	--	--	--
MW-103	6-16	19.47	--	--	7.04	11.85	--	--	--	12.71	14.04	--	--	12.41	14.34	--	--
MW-104	5-15	17.67	--	--	10.39	9.08	--	--	--	8.53	10.36	--	--	8.01	10.88	--	--
MW-105	19-29	38.84	--	--	9.28	8.39	--	--	--	11.79	7.68	--	--	11.22	8.25	--	--
MW-106	9 - 19	26.33	--	--	20.63	18.21	--	--	--	10.24	7.43	--	--	9.64	8.03	--	--
MW-107	2 - 12	14.63	--	--	11.39	14.94	--	--	--	--	--	--	--	21.31	17.53	--	--
MW-108	2 - 12	12.74	--	--	4.43	10.2	--	--	--	--	--	--	--	--	--	--	--
MW-109	3 - 13	24.12	--	--	3.56	9.18	--	--	--	--	--	--	--	--	--	--	--
MW-110	3 - 13	15.58	--	--	10.10	14.02	--	--	--	4.72	8.02	--	--	4.34	8.4	--	--
MW-111	4 - 14	18.95	--	--	1.67	13.91	--	--	--	12.15	11.97	--	--	11.37	12.75	--	--
MW-112	3 - 10	18.16	--	--	10.62	8.33	--	--	--	--	--	--	--	--	--	--	--
MW-112a	4-19	17.78	12.31	5.47	--	--	--	--	--	11.6	7.35	--	--	11.01	7.94	--	--
MW-113	10-20	26.16	--	--	12.14	5.64	12.30	5.48	12.70	5.08	12.72	5.06	12.80	4.98	13.11	4.67	--
MW-114	7-17	29.43	--	--	11.00	15.16	--	--	12.11	14.05	--	--	11.73	14.43	--	--	--
MW-115	10-25	27.15	--	--	10.46	18.97	--	--	13.70	15.73	--	--	12.24	17.19	--	--	--
MW-116	5-15	13.45	--	--	16.22	10.93	--	--	18.51	8.64	--	--	17.76	9.39	--	--	--
MW-117S	5 - 20	21.94	--	--	8.32	5.13	--	--	--	--	--	--	--	--	--	--	--
MW-117T	35 - 45	21.87	--	--	14.06	7.88	--	--	9.06	12.88	--	--	14.39	7.55	--	--	--
MW-117D	60 - 70	21.78	--	--	14.18	7.69	--	--	15.58	6.29	--	--	15.19	6.68	--	--	--
MW-118S	3 - 14	15.52	--	--	14.01	7.77	--	--	15.81	5.97	--	--	15.09	6.69	--	--	--
MW-118T	39.5 - 49.5	15.30	--	--	8.55	6.97	--	--	9.66	5.86	--	--	9.41	6.11	--	--	--
MW-118D	70 - 80	15.15	--	--	9.33	5.97	--	--	10.30	5	--	--	10.12	5.18	--	--	--
MW-119S	5 - 20	11.74	--	--	9.15	6.00	--	--	10.11	5.04	10.03	5.12	10.00	5.15	10.73	4.42	--
MW-119T	42 - 47	11.67	--	--	4.08	7.66	--	--	5.14	6.6	--	--	4.70	7.04	--	--	--
MW-120S	5 - 20	12.54	--	--	5.55	6.12	--	--	6.50	5.17	--	--	6.25	5.42	--	--	--
MW-120D	28 - 38	12.45	--	--	3.65	8.89	--	--	4.78	7.76	--	--	4.26	8.28	--	--	--
MW-121S	5 - 20	12.44	--	--	3.18	9.27	--	--	3.87	8.58	--	--	3.40	9.05	--	--	--
MW-121D	32 - 47	12.81	--	--	7.12	5.32	--	--	7.26	5.18	--	--	6.93	5.51	--	--	--
MW-122	4 - 16	16.42	13.04	3.38	6.77	6.04	13.16	3.26	7.69	5.12	7.55	5.26	7.41	5.4	8.13	4.68	--
GEO-1	5 - 20	25.88	--	--	13.06	3.36	--	--	13.1	3.32	13.16	3.26	13.14	3.28	13.12	3.3	--
GEO-2	5 - 20	26.54	--	--	10.92	14.96	--	--	--	--	--	--	11.50	14.38	--	--	--
GEO-3	5 - 20	25.64	--	--	10.55	15.99	--	--	11.81	14.73	--	--	12.19	14.35	--	--	--
GEO-4	4 - 19	21.69	--	--	10.62	15.02	--	--	12.21	13.43	--	--	11.57	14.07	--	--	--
GEO-5	5 - 20	20.14	--	--	--	--	--	--	11.98	9.71	--	--	11.29	10.4	--	--	--
GEO-6	5 - 20	17.62	--	--	9.18	10.96	--	--	11.18	8.96	--	--	10.45	9.69	--	--	--
SH-1	9 - 14	29.55	--	--	7.63	9.99	--	--	9.54	8.08	--	--	8.56	9.06	--	--	--
SH-2	7 - 14	29.64	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-3	8 - 13	29.66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-4	11 - 16	29.63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-5	8 - 13	29.63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-MW1	10 - 30	24.02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-MW2	10 - 25	24.27	--	--	12.29	11.98	--	--	13.53	10.74	--	--	13.13	11.14	--	--	--
SH-MW3	10 - 24	22.31	--	--	10.46	11.85	--	--	12.00	10.31	--	--	11.43	10.88	--	--	--
MW201	11-21	27.51	--	--	12.57	14.94	--	--	13.43	14.08	--	--	13.15	14.36	--	--	--
MW202	10.5-20.5	27.82	--	--	13.02	14.80	--	--	--	--	--	--	13.54	14.28	--	--	--
MW203	6-18	21.80	--	--	11.83	9.97	--	--	13.85	7.95	--	--	13.15	8.65	--	--	--

- General Notes:**
1. ft = feet.
  2. bgs = below ground surface.
  3. ID = identification.
  4. GW = groundwater.
  5. NAVD = North American Vertical Datum of 1988.
  6. The top of the PVC riser was used as the measuring point for depth to groundwater.
  7. "--" = Well not yet installed, abandoned, or not measured.





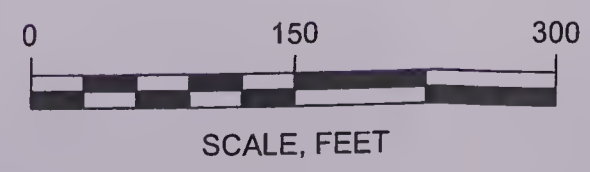


**LEGEND:**

- MONITORING WELL WITH SOIL VAPOR SAMPLE PORT INSTALLED BY GEI, JANUARY 2007 - JANUARY 2008
- MONITORING WELL INSTALLED BY SANBORN HEAD ASSOCIATES, 2002
- MONITORING WELL INSTALLED BY GEOSIGHT, JUNE 2004
- SOIL BORING ADVANCED BY GEOSIGHT, AUGUST 2004
- MONITORING WELL INSTALLED BY GEI, MAY 2006
- DRIVEN POINT MONITORING WELL INSTALLED BY MADEP, MAY 2007
- MONITORING WELL INSTALLED PREVIOUSLY, DATE UNKNOWN
- PREVIOUSLY INSTALLED IRRIGATION WELL
- CHAIN LINK FENCE
- 138 ROOM NUMBER AT CAPUANO SCHOOL
- BOUNDARY OF COMMUNITY GARDENS
- 84 STREET ADDRESS
- MBTA = MASSACHUSETTS BAY TRANSPORTATION AUTHORITY
- DISPOSAL SITE BOUNDARY (DASHED WHERE INFERRED)
- EXTENT OF PCE CONCENTRATION IN GROUNDWATER GREATER THAN OR EQUAL TO 50 µg/l.
- µg/l = MICROGRAMS PER LITER

**GENERAL NOTES:**

1. HORIZONTAL CONTROL FOR THIS PLAN WAS ESTABLISHED BY GPS AND IS BASED ON THE NORTH AMERICAN DATUM OF 1983.
2. STREET AND PROPERTY LINES BASED ON SOMERVILLE ASSESSORS' MAPS AND ARE BEST FIT RELATIVE TO THE LOCATION OF THE 50 TUFTS ST. BUILDING.
3. MONITORING WELL LOCATIONS AND ELEVATIONS, AND CAPUANO CENTER COMMUNITY GARDEN LOCATIONS WERE ESTABLISHED BY ON THE GROUND SURVEYS BY BSC GROUP, INC.
4. GEI OBSERVED DECOMMISSIONING OF SH-MW1 AND SH-1 THROUGH SH-5 IN 2007.
5. THE 50 µg/l BOUNDARY LINE IS BASED ON GROUNDWATER ANALYTICAL RESULTS COLLECTED THROUGH JULY 2009.



Phase V Status Report No. 5 and  
Remedial Monitoring Report No. 20  
50 Tufts Street, Somerville, Massachusetts  
UniFirst Corporation  
Wilmington, Massachusetts



DISPOSAL SITE MAP  
AND  
SITE BOUNDARY  
February 2014  
Fig. 1-2



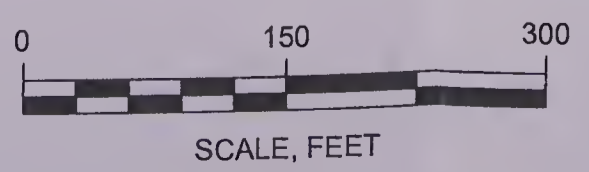


**LEGEND:**

- MONITORING WELL WITH SOIL VAPOR SAMPLE PORT INSTALLED BY GEI, JANUARY 2007 - JANUARY 2008
- MONITORING WELL INSTALLED BY SANBORN HEAD ASSOCIATES, 2002
- MONITORING WELL INSTALLED BY GEOINSIGHT, JUNE 2004
- MONITORING WELL INSTALLED BY GEI, MAY 2006
- DRIVEN POINT MONITORING WELL INSTALLED BY MADEP, MAY 2007
- MONITORING WELL INSTALLED PREVIOUSLY, DATE UNKNOWN
- PREVIOUSLY INSTALLED IRRIGATION WELL
- CHAIN LINK FENCE
- 138 ROOM NUMBER AT CAPUANO SCHOOL
- BOUNDARY OF COMMUNITY GARDENS
- 84 STREET ADDRESS
- MONITORING WELL SAMPLED DURING THIS REPORTING PERIOD

**GENERAL NOTES:**

1. MONITORING WELL LOCATIONS AND ELEVATIONS, AND CAPUANO CENTER COMMUNITY GARDEN LOCATIONS WERE ESTABLISHED BY ON THE GROUND SURVEYS BY BSC GROUP, INC.
2. HORIZONTAL CONTROL FOR THIS PLAN WAS ESTABLISHED BY GPS AND IS BASED ON THE NORTH AMERICAN DATUM OF 1983.
3. VERTICAL CONTROL FOR THIS PLAN WAS ESTABLISHED BY GPS AND IS BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988.
4. STREET PROPERTY LINES, AND BUILDINGS ARE BASED ON SOMERVILLE ASSESSORS MAPS AND ARE BEST FIT RELATIVE TO THE LOCATION OF THE 50 TUFTS ST. BUILDING.
5. GEI OBSERVED ABANDONMENT OF SH-MW1 AND SH-1 THROUGH SH-5 IN 2007.





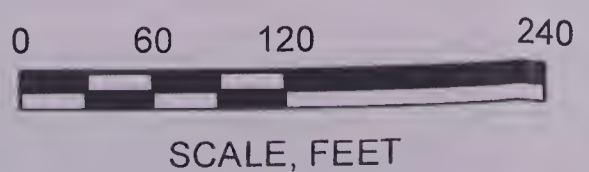
Phase V Status Report No. 5 and Remedial Monitoring Report No. 20 50 Tufts Street, Somerville, Massachusetts UniFirst Corporation Wilmington, Massachusetts	 <b>MONITORING WELL LOCATIONS</b>
Project 04516-3	February 2014
Fig. 2-1	





**LEGEND:**

-  SOIL VAPOR SAMPLED
-  INDOOR AIR SAMPLED



Phase V Status Report No. 5 and  
Remedial Monitoring Report No. 20  
50 Tufts Street, Somerville, Massachusetts

UniFirst Corporation  
Wilmington, Massachusetts



SUB-SLAB SOIL VAPOR AND  
INDOOR AIR SAMPLING

February 2014

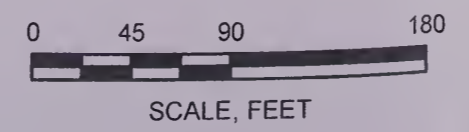
Fig. 2-2




**LEGEND:**

**EPEM STATUS**

- EPEM INSTALLED (ACTIVE)
- EPEM INSTALLED (OTHER EPEM)
- EPEM RECOMMENDED
- EPEM IN PROGRESS



<p>Phase V Status Report No. 5 and Remedial Monitoring Report No. 20 50 Tufts Street, Somerville, Massachusetts</p>		<p><b>EPEM INSTALLATION PROGRESS</b></p>
<p>UniFirst Corporation Wilmington, Massachusetts</p>	<p>Project 04516-3</p>	<p>February 2014</p>
		<p>Fig. 4-1</p>

**Preferred Criteria For:**

**Option 1 (SSDS):**

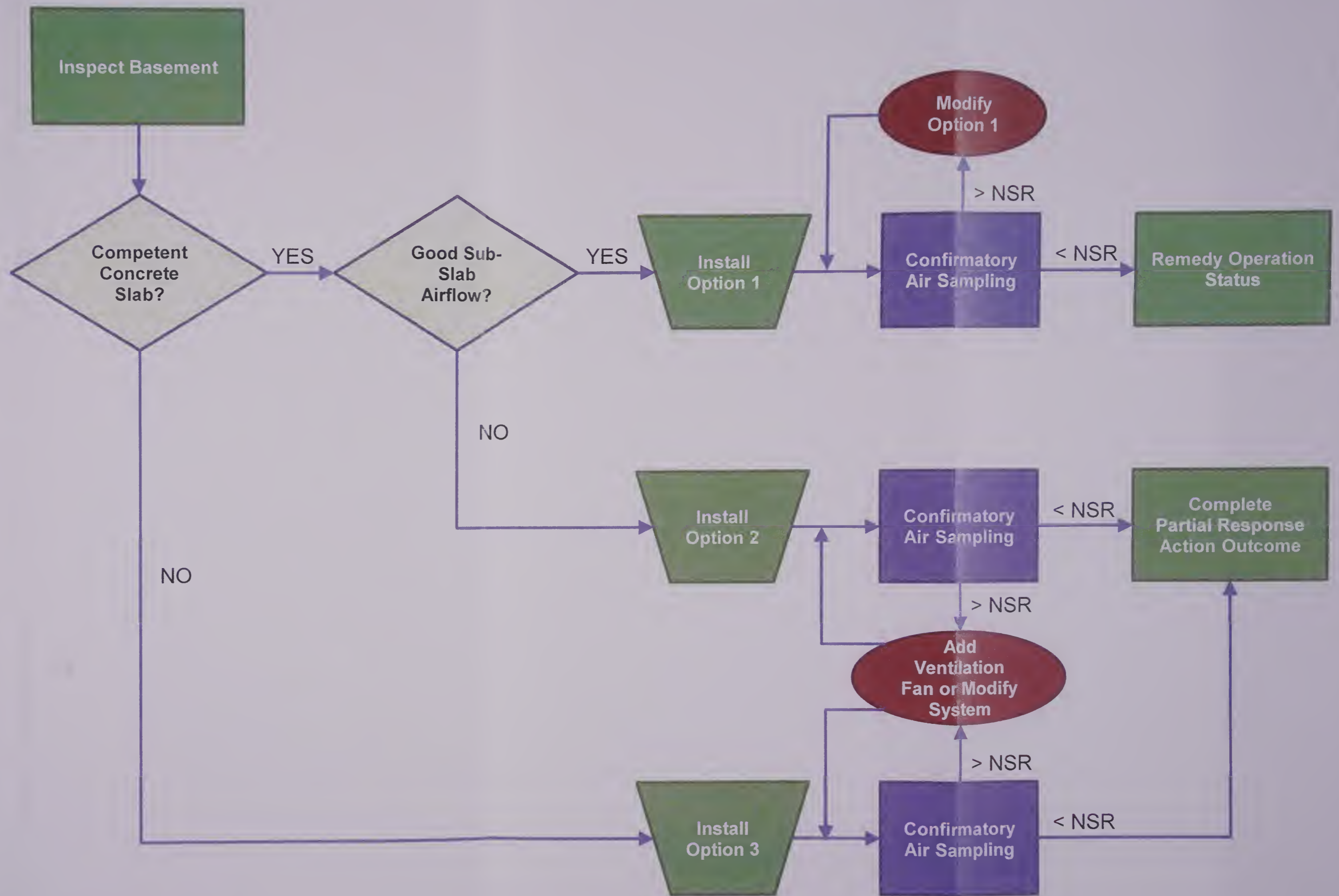
- 1. Competent concrete slab
- 2. Poured concrete foundation
- 3. Granular sub-grade (good sub-slab air flow)

**Option 2 (Vapor Trench):**


- 1. Competent concrete slab
- 2. Silt/clay sub-grade (poor sub-slab air flow)

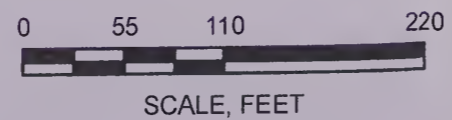
**Option 3 (New Slab Installation):**

- 1. Incompetent concrete slab
- 2. Silt/clay sub-grade (poor sub-slab air flow)



NSR = No Significant Risk

Phase V Status Report No. 5 and Remedial Monitoring Report No. 20 50 Tufts Street, Somerville, Massachusetts		EPem MITIGATION FLOW CHART
UniFirst Corporation Wilmington, Massachusetts	Project 04516-3	



Phase V Status Report No. 5 and  
Remedial Monitoring Report No. 20  
50 Tufts Street, Somerville, Massachusetts

UniFirst Corporation  
Wilmington, Massachusetts



RAO STATUS

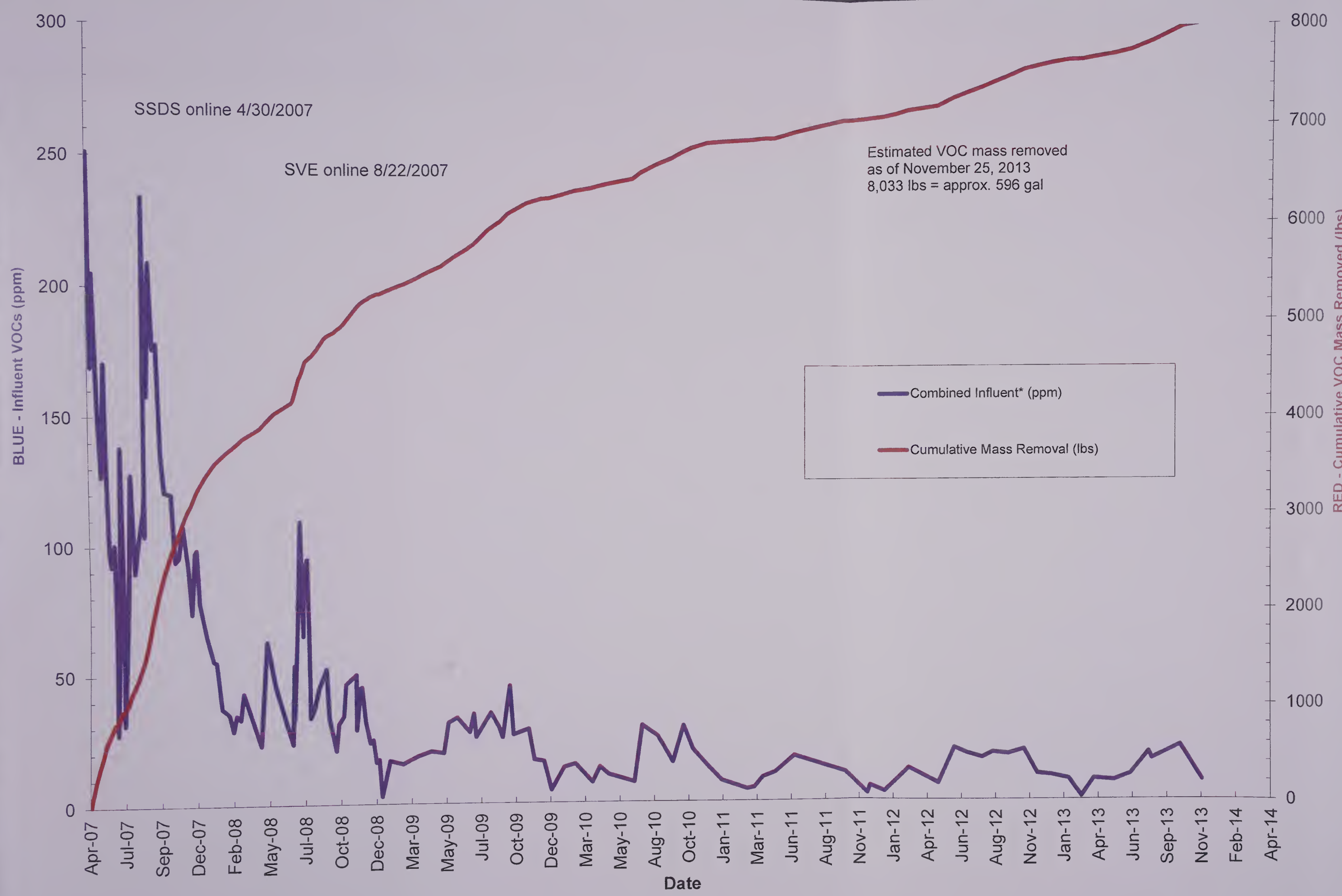
Project 04516-3 February 2014 Fig. 4-3

**LEGEND:**

**RAO STATUS**

- CLASS A-3 RAO-P SUBMITTED
- CLASS B-1 RAO-P SUBMITTED
- REMEDY OPERATION STATUS
- DISPOSAL SITE BOUNDARY (DASHED WHERE INFERRED)





**General Notes:**

- lbs = pounds.
- PCE = tetrachloroethylene (perchloroethylene).
- ppm = parts per million.
- SSDS = sub-slab depressurization system.
- SVE = soil vapor extraction system.
- VOC = volatile organic compound.
- \*Influent concentrations measured by a photoionization detector (PID).

Phase V Status Report No. 4 and  
 Remedial Monitoring Report No. 19  
 50 Tufts Street, Somerville, Massachusetts

UniFirst Corporation  
 Wilmington, Massachusetts



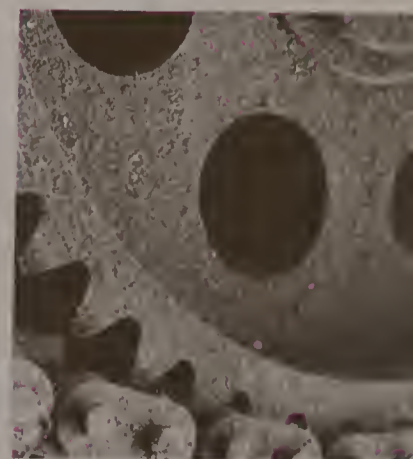
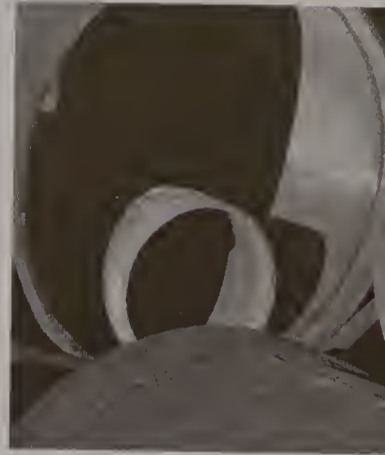
COMBINED INFLUENT VOC  
 CONCENTRATIONS AND  
 CUMULATIVE VOC REMOVAL

Project 04516-3 February 2014 Fig. 6-1





Geotechnical  
Environmental  
Water Resources  
Ecological





## Appendix A

---

### MassDEP Transmittal Forms BWSC-108, BWSC-108A, and BWSC-108B and eDEP Transmittal Receipts

#### Comprehensive Response Action Transmittal Forms:

- BWSC-108A 1 of 5 (50 Tufts SSDS)
- BWSC-108B 1 of 5 (50 Tufts SSDS)
- BWSC-108A 2 of 5 (50 Tufts SVE)
- BWSC-108B 2 of 5 (50 Tufts SVE)
- BWSC-108A 3 of 5 (Capuano Center)
- BWSC-108B 3 of 5 (Capuano Center)
- BWSC-108A 4 of 5 (Residences)
- BWSC-108A 5 of 5 (MNA)





**COMPREHENSIVE RESPONSE ACTION TRANSMITTAL  
FORM & PHASE I COMPLETION STATEMENT**

Pursuant to 310 CMR 40.0484 (Subpart D) and 40.0800 (Subpart H)

Release Tracking Number

3 - 23246

**A. SITE LOCATION:**

1. Site Name: 50 TUFTS ST & PROP ACROSS THE ST  
2. Street Address: 50 TUFTS ST  
3. City/Town: SOMERVILLE 4. ZIP Code: 021454129

5. Check here if the disposal site that is the source of the release is Tier Classified. Check the current Tier Classification Category:

a. Tier I       b. Tier ID       c. Tier II

**B. THIS FORM IS BEING USED TO: (check all that apply)**

- 1. Submit a **Phase I Completion Statement**, pursuant to 310 CMR 40.0484.
- 2. Submit a **Revised Phase I Completion Statement**, pursuant to 310 CMR 40.0484.
- 3. Submit a **Phase II Scope of Work**, pursuant to 310 CMR 40.0834.
- 4. Submit an **interim Phase II Report**. This report does not satisfy the response action deadline requirements in 310 CMR 40.0500.
- 5. Submit a **final Phase II Report and Completion Statement**, pursuant to 310 CMR 40.0836.
- 6. Submit a **Revised Phase II Report and Completion Statement**, pursuant to 310 CMR 40.0836.
- 7. Submit a **Phase III Remedial Action Plan and Completion Statement**, pursuant to 310 CMR 40.0862.
- 8. Submit a **Revised Phase III Remedial Action Plan and Completion Statement**, pursuant to 310 CMR 40.0862.
- 9. Submit a **Phase IV Remedy Implementation Plan**, pursuant to 310 CMR 40.0874.
- 10. Submit a **Modified Phase IV Remedy Implementation Plan**, pursuant to 310 CMR 40.0874.
- 11. Submit an **As-Built Construction Report**, pursuant to 310 CMR 40.0875.
- 12. Submit a **Phase IV Status Report**, pursuant to 310 CMR 40.0877.
- 13. Submit a **Phase IV Completion Statement**, pursuant to 310 CMR 40.0878 and 40.0879.

Specify the outcome of Phase IV activities: (check one)

- a. Phase V Operation, Maintenance or Monitoring of the Comprehensive Remedial Action is necessary to achieve a Permanent or Temporary Solution.
- b. The requirements of a Permanent Solution have been met. A completed Permanent Solution Statement and Report (BWSC104) will be submitted to DEP.
- c. The requirements of a Temporary Solution have been met. A completed Temporary Solution Statement and Report (BWSC104) will be submitted to DEP.







**COMPREHENSIVE RESPONSE ACTION TRANSMITTAL  
FORM & PHASE I COMPLETION STATEMENT**

Release Tracking Number

3 - 23246

Pursuant to 310 CMR 40.0484 (Subpart D) and 40.0800 (Subpart H)

**B. THIS FORM IS BEING USED TO (cont.):** (check all that apply)

- 14. Submit a **Revised Phase IV Completion Statement**, pursuant to 310 CMR 40.0878 and 40.0879.
- 15. Submit a **Phase V Status Report**, pursuant to 310 CMR 40.0892.
- 16. Submit a **Remedial Monitoring Report**. (This report can only be submitted through eDEP.)
  - a. Type of Report: (check one)       i. Initial Report       ii. Interim Report       iii. Final Report
  - b. Frequency of Submittal: (check all that apply)
    - i. A Remedial Monitoring Report(s) submitted monthly to address an Imminent Hazard.
    - ii. A Remedial Monitoring Report(s) submitted monthly to address a Condition of Substantial Release Migration.
    - iii. A Remedial Monitoring Report(s) submitted every sixth months, concurrent with a Status Report.
    - iv. A Remedial Monitoring Report(s) submitted annually. concurrent with a Status Report.
  - c. Status of Site: (check one)       i. Phase IV       ii. Phase V       iii. Remedy Operation Status       iv. Temporary Solution
  - d. Number of Remedial Systems and/or Monitoring Programs:      5

A separate BWSC108A, CRA Remedial Monitoring Report, must be filled out for each Remedial System and/or Monitoring Program addressed by this transmittal form.

- 17. Submit a **Remedy Operation Status**, pursuant to 310 CMR 40.0893.
- 18. Submit a **Status Report to maintain a Remedy Operation Status**, pursuant to 310 CMR 40.0893(2).
- 19. Submit a **Transfer and/or a Modification of Persons Maintaining a Remedy Operation Status (ROS)**, pursuant to 310 CMR 40.0893(5) (check one, or both, if applicable).
  - a. Submit a Transfer of Persons Maintaining an ROS (the transferee should be the person listed in Section D, "Person Undertaking Response Actions").
  - b. Submit a Modification of Persons Maintaining an ROS (the primary representative should be the person listed in Section D, "Person Undertaking Response Actions").
  - c. Number of Persons Maintaining an ROS not including the primary representative: \_\_\_\_\_
- 20. Submit a **Termination of a Remedy Operation Status**, pursuant to 310 CMR 40.0893(6).(check one)
  - a. Submit a notice indicating ROS performance standards have not been met. A plan and timetable pursuant to 310 CMR 40.0893(6) (b) for resuming the ROS are attached.
  - b. Submit a notice of Termination of ROS.
- 21. Submit a **Phase V Completion Statement**, pursuant to 310 CMR 40.0894.
 

Specify the outcome of Phase V activities: (check one)

  - a. The requirements of a Permanent Solution have been met. A completed Permanent Solution Statement and Report (BWSC104) will be submitted to DEP.
  - b. The requirements for a Temporary Solution have been met. A completed Temporary Solution Statement and Report (BWSC104) will be submitted to DEP.
- 22. Submit a **Revised Phase V Completion Statement**, pursuant to 310 CMR 40.0894.
- 23. Submit a **Temporary Solution Status Report**, pursuant to 310 CMR 40.0898.
- 24. Submit a **Plan for the Application of Remedial Additives** near a sensitive receptor, pursuant to 310 CMR 40.0046(3).
  - a. Status of Site: (check one)
    - i. Phase IV       ii. Phase V       iii. Remedy Operation Status       iv. Temporary Solution





**COMPREHENSIVE RESPONSE ACTION TRANSMITTAL  
FORM & PHASE I COMPLETION STATEMENT**

Release Tracking Number

3 - 23246

Pursuant to 310 CMR 40.0484 (Subpart D) and 40.0800 (Subpart H)

**C. LSP SIGNATURE AND STAMP:**

I attest under the pains and penalties of perjury that I have personally examined and am familiar with this transmittal form, including any and all documents accompanying this submittal. In my professional opinion and judgment based upon application of (i) the standard of care in 309 CMR 4.02(1), (ii) the applicable provisions of 309 CMR 4.02(2) and (3), and 309 CMR 4.03(2), and (iii) the provisions of 309 CMR 4.03(3), to the best of my knowledge, information and belief,

> if Section B indicates that a **Phase I, Phase II, Phase III, Phase IV or Phase V Completion Statement and/or a Termination of a Remedy Operation Status** is being submitted, the response action(s) that is (are) the subject of this submittal (i) has (have) been developed and implemented in accordance with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, (ii) is (are) appropriate and reasonable to accomplish the purposes of such response action(s) as set forth in the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, and (iii) comply(ies) with the identified provisions of all orders, permits, and approvals identified in this submittal;

> if Section B indicates that a **Phase II Scope of Work or a Phase IV Remedy Implementation Plan** is being submitted, the response action (s) that is (are) the subject of this submittal (i) has (have) been developed in accordance with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, (ii) is (are) appropriate and reasonable to accomplish the purposes of such response action(s) as set forth in the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, and (iii) comply(ies) with the identified provisions of all orders, permits, and approvals identified in this submittal;

> if Section B indicates that an **As-Built Construction Report, a Remedy Operation Status, a Phase IV, Phase V or Temporary Solution Status Report, a Status Report to Maintain a Remedy Operation Status, a Transfer or Modification of Persons Maintaining a Remedy Operation Status and/or a Remedial Monitoring Report** is being submitted, the response action(s) that is (are) the subject of this submittal (i) is (are) being implemented in accordance with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, (ii) is (are) appropriate and reasonable to accomplish the purposes of such response action(s) as set forth in the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, and (iii) comply(ies) with the identified provisions of all orders, permits, and approvals identified in this submittal.

I am aware that significant penalties may result, including, but not limited to, possible fines and imprisonment, if I submit information which I know to be false, inaccurate or materially incomplete.

1. LSP#: 9719

2. First Name: ILEENS 3. Last Name: GLADSTONE

4. Telephone: 7817214012 5. Ext.: 6. Email:

7. Signature:

8. Date: (mm/dd/yyyy) 9. LSP Stamp:







**COMPREHENSIVE RESPONSE ACTION TRANSMITTAL  
FORM & PHASE I COMPLETION STATEMENT**

Release Tracking Number

3 - 23246

Pursuant to 310 CMR 40.0484 (Subpart D) and 40.0800 (Subpart H)

**D. PERSON UNDERTAKING RESPONSE ACTIONS:**

1. Check all that apply:  a. change in contact name  b. change of address  c. change in the person undertaking response actions

2. Name of Organization: UNIFIRST CORPORATION

3. Contact First Name: TIMOTHY 4. Last Name: COSGRAVE

5. Street: 68 JONSPIN RD 6. Title: SENIOR MGR EH&S

7. City/Town: WILMINGTON 8. State: MA 9. ZIP Code: 018871090

10. Telephone: 9786588888 11. Ext: 4332 12. Email: \_\_\_\_\_

**E. RELATIONSHIP TO SITE OF PERSON UNDERTAKING RESPONSE ACTIONS:**  Check here to change relationship

1. RP or PRP  a. Owner  b. Operator  c. Generator  d. Transporter

e. Other RP or PRP Specify: OTHER PRPS

2. Fiduciary, Secured Lender or Municipality with Exempt Status (as defined by M.G.L. c. 21E, s. 2)

3. Agency or Public Utility on a Right of Way (as defined by M.G.L. c. 21E, s. 5(j))

4. Any Other Person Undertaking Response Actions Specify Relationship: \_\_\_\_\_

**F. REQUIRED ATTACHMENT AND SUBMITTALS:**

1. Check here if the Response Action(s) on which this opinion is based, if any, are (were) subject to any order(s), permit(s) and/or approval(s) issued by DEP or EPA. If the box is checked, you MUST attach a statement identifying the applicable provisions thereof.

2. Check here to certify that the Chief Municipal Officer and the Local Board of Health have been notified of the submittal of any Phase Reports to DEP.

3. Check here to certify that the Chief Municipal Officer and the Local Board of Health have been notified of the availability of a Phase III Remedial Action Plan.

4. Check here to certify that the Chief Municipal Officer and the Local Board of Health have been notified of the availability of a Phase IV Remedy Implementation Plan.

5. Check here to certify that the Chief Municipal Officer and the Local Board of Health have been notified of any field work involving the implementation of a Phase IV Remedial Action.

6. If submitting a Transfer of a Remedy Operation Status (as per 310 CMR 40.0893(5)), check here to certify that a statement detailing the compliance history for the person making this submittal (transferee) is attached.

7. If submitting a Modification of a Remedy Operation Status (as per 310 CMR 40.0893(5)), check here to certify that a statement detailing the compliance history for each new person making this submittal is attached.

8. Check here if any non-updatable information provided on this form is incorrect, e.g. Release Address/Location Aid. Send corrections to: BWSC.eDEP@state.ma.us.

9. Check here to certify that the LSP Opinion containing the material facts, data, and other information is attached.





Massachusetts Department of Environmental Protection  
Bureau of Waste Site Cleanup

BWSC 108

COMPREHENSIVE RESPONSE ACTION TRANSMITTAL  
FORM & PHASE I COMPLETION STATEMENT

Release Tracking Number

3 - 23246

Pursuant to 310 CMR 40.0484 (Subpart D) and 40.0800 (Subpart H)

G. CERTIFICATION OF PERSON UNDERTAKING RESPONSE ACTIONS:

I, \_\_\_\_\_, attest under the pains and penalties of perjury (i) that I have personally examined and am familiar with the information contained in this submittal, including any and all documents accompanying this transmittal form, (ii) that, based on my inquiry of those individuals immediately responsible for obtaining the information, the material information contained in this submittal is, to the best of my knowledge and belief, true, accurate and complete, and (iii) that I am fully authorized to make this attestation on behalf of the entity legally responsible for this submittal. I/the person or entity on whose behalf this submittal is made am/is aware that there are significant penalties, including, but not limited to, possible fines and imprisonment, for willfully submitting false, inaccurate, or incomplete information.

>if Section B indicates that this is a **Modification of a Remedy Operation Status (ROS)**, I attest under the pains and penalties of perjury that I am fully authorized to act on behalf of all persons performing response actions under the ROS as stated in 310 CMR 40.0893(5)(d) to receive oral and written correspondence from MassDEP with respect to performance of response actions under the ROS, and to receive a statement of fee amount as per 4.03(3).

I understand that any material received by the Primary Representative from MassDEP shall be deemed received by all the persons performing response actions under the ROS, and I am aware that there are significant penalties, including, but not limited to, possible fines and imprisonment, for willfully submitting false, inaccurate or incomplete information.

2. By: \_\_\_\_\_ 3. Title: SENIOR MGR EH&S  
Signature

4. For: UNIFIRST CORPORATION 5. Date: \_\_\_\_\_  
(Name of person or entity recorded in Section D) (mm/dd/yyyy)

6. Check here if the address of the person providing certification is different from address recorded in Section D.

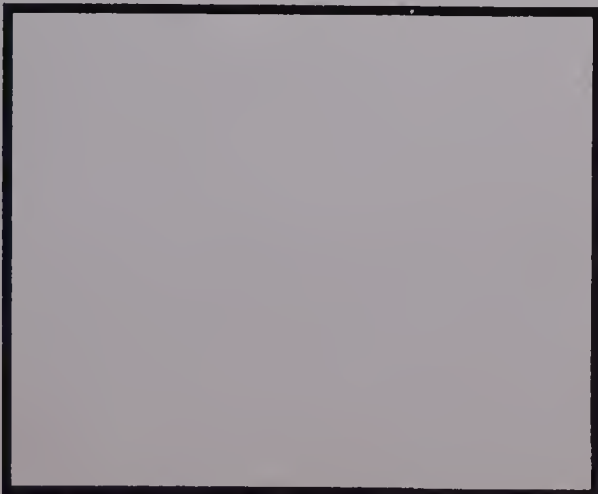
7. Street: \_\_\_\_\_

8. City/Town: \_\_\_\_\_ 9. State: \_\_\_\_\_ 10. ZIP Code: \_\_\_\_\_

11. Telephone: \_\_\_\_\_ 12. Ext.: \_\_\_\_\_ 13. Email: \_\_\_\_\_

**YOU MUST LEGIBLY COMPLETE ALL RELEVANT SECTIONS OF THIS FORM OR DEP MAY RETURN THE DOCUMENT AS INCOMPLETE. IF YOU SUBMIT AN INCOMPLETE FORM, YOU MAY BE PENALIZED FOR MISSING A REQUIRED DEADLINE.**

Date Stamp (DEP USE ONLY:)







MassDEP RTN 3-23246  
Phase V Status Report No. 5 and Remedial Monitoring Report No. 20  
50 Tufts Street, Somerville, Massachusetts  
UniFirst Corporation  
February 10, 2014

**Additional supporting information for:**

**COMPREHENSIVE RESPONSE ACTION TRANSMITTAL  
FORM & PHASE I COMPLETION STATEMENT**

Pursuant to 310 CMR 40.0484 (Subpart D) and 40.0800 (Subpart H)

**BWSC-108**, Section B, Question 18: Submit a **Status Report to maintain a Remedy Operation Status**, pursuant to 310 CMR 40.0893(2).

The Status Report to maintain ROS has been submitted via eDEP, Transmittal No. **627682** as part of the "Phase V Status Report No. 5 and Remedial Monitoring Report No. 20," RTN 3-23246, 50 Tufts Street, Somerville, Massachusetts, dated February 10, 2014.





Massachusetts Department of Environmental Protection

Bureau of Waste Site Cleanup

CRA REMEDIAL MONITORING REPORT

Pursuant to 310 CMR 40.0800 (SUBPART H)

Remedial System or Monitoring Program: 1 of 5

BWSC108 -A

Release Tracking Number

3 - 23246

A. DESCRIPTION OF ACTIVE REMEDIAL SYSTEM OR ACTIVE REMEDIAL MONITORING PROGRAM:

1. Type of Active Operation and Maintenance Activity: (check all that apply)

[x] a. Active Remedial System: (check all that apply)

[ ] i. NAPL Recovery

[ ] ii. Soil Vapor Extraction/Bioventing

[ ] iii. Vapor-phase Carbon Adsorption

[ ] iv. Groundwater Recovery

[ ] v. Dual/Multi-phase Extraction

[ ] vi. Aqueous-phase Carbon Adsorption

[ ] vii. Air Stripping

[ ] viii. Sparging/Biosparging

[ ] ix. Cat/Thermal Oxidation

[x] x. Other Describe: SUB-SLAB DEPRESSURIZATION SYSTEM

[ ] b. Active Exposure Pathway Elimination Measure

Active Exposure Pathway Mitigation System to address (check one): [ ] i. Indoor Air [ ] ii. Drinking Water

[ ] c. Application of Remedial Additives: (check all that apply)

[ ] i. To the Subsurface

[ ] ii. To Groundwater (Injection)

[ ] iii. To the Surface

[ ] d. Active Remedial Monitoring Program Without the Application of Remedial Additives: (check all that apply; Sections C, D and E are not required; attach supporting information, data, maps and/or sketches needed by checking Section G5)

[ ] i. Reactive Wall [ ] ii. Natural Attenuation [ ] iii. Other Describe:

2. Mode of Operation: (check one)

[x] a. Continuous [ ] b. Intermittent [ ] c. Pulsed [ ] d. One-time Event Only [ ] e. Other:

3. System Effluent/Discharge: (check all that apply)

[ ] a. Sanitary Sewer/POTW

[ ] b. Groundwater Re-infiltration/Re-injection: (check one)

[ ] i. Downgradient

[ ] ii. Upgradient

[x] c. Vapor-phase Discharge to Ambient Air: (check one)

[x] i. Off-gas Controls

[ ] ii. No Off-gas Controls

[ ] d. Drinking Water Supply

[ ] e. Surface Water (including Storm Drains)

[ ] f. Other Describe:

B. MONITORING FREQUENCY:

1. Reporting period that is the subject of this submittal:

From: 6/16/2013

To: 12/15/2013

(mm/dd/yyyy)

(mm/dd/yyyy)

2. Number of monitoring events during the reporting period: (check one)

[ ] a. System Startup: (if applicable)

[ ] i. Days 1, 3, 6, and then weekly thereafter, for the first month.

[ ] ii. Other Describe:

[x] b. Post-system Startup (after first month) or Monitoring Program:

[ ] i. Monthly

[ ] ii. Quarterly

[ ] iii. Annually

[x] iii. Other Describe: TOTAL VOCS, ~MONTHLY

[x] 3. Check here to certify that the number of required monitoring events were conducted during the reporting period.

C. EFFLUENT/DISCHARGE REGULATION: (check one to indicate how the effluent/discharge limits were established)

[ ] 1. NPDES: (check one)

[ ] a. Remediation General Permit

[ ] b. Individual Permit

[ ] c. Emergency Exclusion

Effective Date of Permit:

(mm/dd/yyyy)

[x] 2. MCP Performance Standard MCP Citations(s): WSC-94-150

[ ] 3. DEP Approval Letter Date of Letter:

(mm/dd/yyyy)

[ ] 4. Other Describe:





**Massachusetts Department of Environmental Protection**  
 Bureau of Waste Site Cleanup  
**CRA REMEDIAL MONITORING REPORT**  
 Pursuant to 310 CMR 40.0800 (SUBPART H)  
 Remedial System or Monitoring Program:  of:

BWSC108 -A

Release Tracking Number

-

**D. WASTEWATER TREATMENT PLANT OPERATOR:** (check one)

1. Required due to Remedial Wastewater Treatment Plant in place for more than 30 days.  
 a. Name: \_\_\_\_\_ b. Grade: \_\_\_\_\_  
 c. License No: \_\_\_\_\_ d. License Exp. Date: \_\_\_\_\_  
 (mm/dd/yyyy)
2. Not Required
3. Not Applicable

**E. STATUS OF ACTIVE REMEDIAL SYSTEM OR ACTIVE REMEDIAL MONITORING PROGRAM DURING REPORTING PERIOD:** (check all that apply)

1. The Active Remedial System was functional one or more days during the Reporting Period.  
 a. Days System was Fully Functional: 182 b. GW Recovered (gals): \_\_\_\_\_  
 c. NAPL Recovered (gals): \_\_\_\_\_ d. GW Discharged (gals): \_\_\_\_\_  
 e. Avg. Soil Gas Recovery Rate (scfm): 313.38 f. Avg. Sparging Rate (scfm): \_\_\_\_\_

2. Remedial Additives: (check all that apply)

- a. No Remedial Additives applied during the Reporting Period.  
 b. Enhanced Bioremediation Additives applied: (total quantity applied at the site for the current reporting period)  
 i. Nitrogen/Phosphorus:

ii. Peroxides:

					Name of Additive			Date	Quantity
Units	Name of Additive	Date	Quantity	Units					

iii. Microorganisms:

iv. Other:

					Name of Additive			Date	Quantity
Units	Name of Additive	Date	Quantity	Units					

c. Chemical oxidation/reduction additives applied: (total quantity applied at the site for the current reporting period)

i. Permanganates:

Name of Additive	Date	Quantity	Units

ii. Peroxides:

Name of Additive	Date	Quantity	Units

iii. Persulfates:

Name of Additive	Date	Quantity	Units

iv. Other:

Name of Additive	Date	Quantity	Units





Massachusetts Department of Environmental Protection

Bureau of Waste Site Cleanup

CRA REMEDIAL MONITORING REPORT

Pursuant to 310 CMR 40.0800 (SUBPART H)

Remedial System or Monitoring Program: 1

of: 5

BWSC108 -A

Release Tracking Number

3 - 23246

E. STATUS OF ACTIVE REMEDIAL SYSTEM OR ACTIVE REMEDIAL MONITORING PROGRAM DURING REPORTING PERIOD: (cont.)							

d. Other additives applied: (total quantity applied at the site for the current reporting period)

Name of Additive	Date	Quantity	Units

Name of Additive	Date	Quantity	Units

e. Check here if any additional Remedial Additives were applied. Attach list of additional additives and include Name of Additive, Date Applied, Quantity Applied and Units (in gals. or lbs.)

F. SHUTDOWNS OF ACTIVE REMEDIAL SYSTEM OR ACTIVE REMEDIAL MONITORING PROGRAM: (check all that apply)

1. The Active Remedial System had unscheduled shutdowns on one or more occasions during the Reporting Period.

a. Number of Unscheduled Shutdowns: b. Total Number of Days of Unscheduled Shutdowns: c. Reason(s) for Unscheduled Shutdowns:

2. The Active Remedial System had scheduled shutdowns on one or more occasions during the Reporting Period.

a. Number of Unscheduled Shutdowns: 1 b. Total Number of Days of Unscheduled Shutdowns: 0.1 c. Reason(s) for Unscheduled Shutdowns: CARBON CHANGE ON 8/7/2013, APPROXIMATELY 3 HOURS

3. The Active Remedial System or Active Remedial Monitoring Program was permanently shutdown/discontinued during the Reporting Period.

a. Date of Final System or Monitoring Program Shutdown: (mm/dd/yyyy)

b. No Further Effluent Discharges.

c. No Further Application of Remedial Additives planned; sufficient monitoring completed to demonstrate compliance with 310 CMR 40.0046.

d. No Further Submittals Planned.

e. Other: Describe:

G. SUMMARY STATEMENTS: (check all that apply for the current reporting period)

1. All Active Remedial System checks and effluent analyses required by the approved plan and/or permit were performed when applicable.

2. There were no significant problems or prolonged (>25% of reporting period) unscheduled shutdowns of the Active Remedial System.

3. The Active Remedial System or Active Remedial Monitoring Program operated in conformance with the MCP, and all applicable approval conditions and/or permits.

4. Indicate any Operational Problems or Notes:

JUNE AND JULY 2013 MONITORING INDICATED LESS THAN 95% REMOVAL, BUT ACCURACY OF PID READINGS UNCER

5. Check here if additional/supporting Information, data, maps, and/or sketches are attached to the form.





## **Additional supporting information for:**

### **CRA REMEDIAL MONITORING REPORT**

Pursuant to 310 CMR 40.0800 (Subpart H)

#### **BWSC-108A**, Remedial System 1 of 5, Section G, Question 5: **SUMMARY**

**STATEMENTS:** Check here if additional/supporting Information, data, maps, and/or sketches are attached to the form.

The system has been operating generally under the same conditions for over 6 years, and monthly monitoring has demonstrated that the system has routinely achieved greater than 95% removal.

Monthly monitoring on May 16, 2013 indicated that the system was achieving at least 95% removal, the objective for off-gas treatment efficiency. The June 21, 2013 monthly monitoring results suggested that the system may not have been achieving 95% removal, but, as explained below, there is reason to question such a result.

On June 21, 2013 the photoionization detector (PID) reading for the influent was 9.7 parts per million (ppm), the off-gas reading from the lead carbon tank was 2.2 ppm, and the off-gas reading from the secondary carbon tank was 3.9 ppm (where system effluent emits to the atmosphere). On July 31, 2013 the PID reading for the influent was 19.0 ppm, the off-gas reading from the lead carbon tank was 3.2 ppm, and the off-gas reading from the secondary carbon tank was 13.2 ppm. The accuracy of the PID readings for each of these rounds is uncertain. It is unlikely that the concentration of the off gas from the secondary tank would be higher than the lead tank. Based on the system design and mass loading principals, the secondary carbon tank should not be emitting higher concentrations than the lead carbon tank. This phenomenon could occur if the carbon in the secondary tank was saturated and desorption of VOCs was occurring, but this is very unlikely since the breakthrough of VOCs through activated carbon is typically a gradual process. The monthly monitoring for April, May, June, and July 2013 indicated 96.5%, 100%, 59.7%, and 31% removal, respectively. Breakthrough should not be this significant over such a short period of time and effluent concentrations in the secondary tank should not be higher than the lead tank; therefore, it is likely that the PID readings were inaccurate. We have experienced PID interference at this Site and other sites attributable to humidity during past monitoring rounds, especially during humid summer months. The appearance of inadequate removal is more likely due to anomalous PID readings than a saturated carbon tank.





Massachusetts Department of Environmental Protection

Bureau of Waste Site Cleanup

CRA REMEDIAL MONITORING REPORT  
EFFLUENT/DISCHARGE CONCENTRATIONS

Pursuant to 310 CMR 40.0800 (SUBPART H)

Remedial System or Monitoring Program: 1 of 5

BWSC108 -B

Release Tracking Number

3

23246

For each Point of Measurement, indicate the highest concentration detected during the reporting period, of each oil, hazardous material and/or remedial additive.

Point of Measurement	Date (mm/dd/yyyy)	Contaminant, Measurement and/or Indicator Parameter	Influent Concentration (where applicable)	Midpoint Concentration (where applicable)	(check one)		Permissible Concentration	Units	Within Permissible Limits? (Y/N)
					<input checked="" type="checkbox"/> Discharge	<input type="checkbox"/> GroundWater Concentration			
SSDS	06/21/2013	TOTAL VOCS	9.7	2.2	3.9	<input type="checkbox"/>	0.485	ppmv	No
SSDS	07/31/2013	TOTAL VOCS	19.0	3.2	13.2	<input type="checkbox"/>	0.95	ppmv	No
SSDS	08/07/2013	TOTAL VOCS	16.3			<input checked="" type="checkbox"/>	0.815	ppmv	Yes
SSDS	10/08/2013	TOTAL VOCS	21.9			<input checked="" type="checkbox"/>	1.095	ppmv	Yes
SSDS	11/25/2013	TOTAL VOCS	8.3			<input checked="" type="checkbox"/>	0.415	ppmv	Yes

Check here if any additional BWSC108 B, Effluent/Discharge Concentrations Form, is needed.





A. DESCRIPTION OF ACTIVE REMEDIAL SYSTEM OR ACTIVE REMEDIAL MONITORING PROGRAM:

1. Type of Active Operation and Maintenance Activity: (check all that apply)

[x] a. Active Remedial System: (check all that apply)

[ ] i. NAPL Recovery

[x] ii. Soil Vapor Extraction/Bioventing

[ ] iii. Vapor-phase Carbon Adsorption

[ ] iv. Groundwater Recovery

[ ] v. Dual/Multi-phase Extraction

[ ] vi. Aqueous-phase Carbon Adsorption

[ ] vii. Air Stripping

[ ] viii. Sparging/Biosparging

[ ] ix. Cat/Thermal Oxidation

[ ] x. Other Describe: \_\_\_\_\_

[ ] b. Active Exposure Pathway Elimination Measure

Active Exposure Pathway Mitigation System to address (check one): [ ] i. Indoor Air [ ] ii. Drinking Water

[ ] c. Application of Remedial Additives: (check all that apply)

[ ] i. To the Subsurface

[ ] ii. To Groundwater (Injection)

[ ] iii. To the Surface

[ ] d. Active Remedial Monitoring Program Without the Application of Remedial Additives: (check all that apply; Sections C, D and E are not required; attach supporting information, data, maps and/or sketches needed by checking Section G5)

[ ] i. Reactive Wall [ ] ii. Natural Attenuation [ ] iii. Other Describe: \_\_\_\_\_

2. Mode of Operation: (check one)

[x] a. Continuous

[ ] b. Intermittent

[ ] c. Pulsed

[ ] d. One-time Event Only

[ ] e. Other: \_\_\_\_\_

3. System Effluent/Discharge: (check all that apply)

[ ] a. Sanitary Sewer/POTW

[ ] b. Groundwater Re-infiltration/Re-injection: (check one)

[ ] i. Downgradient

[ ] ii. Upgradient

[x] c. Vapor-phase Discharge to Ambient Air: (check one)

[x] i. Off-gas Controls

[ ] ii. No Off-gas Controls

[ ] d. Drinking Water Supply

[ ] e. Surface Water (including Storm Drains)

[ ] f. Other Describe: \_\_\_\_\_

B. MONITORING FREQUENCY:

1. Reporting period that is the subject of this submittal:

From: 6/16/2013

To: 12/15/2013

(mm/dd/yyyy)

(mm/dd/yyyy)

2. Number of monitoring events during the reporting period: (check one)

[ ] a. System Startup: (if applicable)

[ ] i. Days 1, 3, 6, and then weekly thereafter, for the first month.

[ ] ii. Other Describe: \_\_\_\_\_

[x] b. Post-system Startup (after first month) or Monitoring Program:

[ ] i. Monthly

[ ] ii. Quarterly

[ ] iii. Annually

[x] iii. Other Describe: TOTAL VOCS, ~MONTHLY

[x] 3. Check here to certify that the number of required monitoring events were conducted during the reporting period.

C. EFFLUENT/DISCHARGE REGULATION: (check one to indicate how the effluent/discharge limits were established)

[ ] 1. NPDES: (check one)

[ ] a. Remediation General Permit

[ ] b. Individual Permit

[ ] c. Emergency Exclusion

Effective Date of Permit: \_\_\_\_\_

(mm/dd/yyyy)

[x] 2. MCP Performance Standard

MCP Citations(s):

WSC-94-150

[ ] 3. DEP Approval Letter

Date of Letter: \_\_\_\_\_

(mm/dd/yyyy)

[ ] 4. Other Describe: \_\_\_\_\_





Massachusetts Department of Environmental Protection

Bureau of Waste Site Cleanup

CRA REMEDIAL MONITORING REPORT

Pursuant to 310 CMR 40.0800 (SUBPART H)

Remedial System or Monitoring Program: 2 of 5

BWSC108 -A

Release Tracking Number

3 - 23246

D. WASTEWATER TREATMENT PLANT OPERATOR: (check one)

- 1. Required due to Remedial Wastewater Treatment Plant in place for more than 30 days. a. Name: b. Grade: c. License No: d. License Exp. Date: (mm/dd/yyyy)

- 2. Not Required
3. Not Applicable

E. STATUS OF ACTIVE REMEDIAL SYSTEM OR ACTIVE REMEDIAL MONITORING PROGRAM DURING REPORTING PERIOD: (check all that apply)

- 1. The Active Remedial System was functional one or more days during the Reporting Period. a. Days System was Fully Functional: 182 b. GW Recovered (gals): c. NAPL Recovered (gals): d. GW Discharged (gals): e. Avg. Soil Gas Recovery Rate (scfm): 313.38 f. Avg. Sparging Rate (scfm):

2. Remedial Additives: (check all that apply)

- a. No Remedial Additives applied during the Reporting Period.
b. Enhanced Bioremediation Additives applied: (total quantity applied at the site for the current reporting period)

i. Nitrogen/Phosphorus:

ii. Peroxides:

Table with 6 columns: Units, Name of Additive, Date, Quantity, Units, Name of Additive, Date, Quantity

iii. Microorganisms:

iv. Other:

Table with 6 columns: Units, Name of Additive, Date, Quantity, Units, Name of Additive, Date, Quantity

c. Chemical oxidation/reduction additives applied: (total quantity applied at the site for the current reporting period)

i. Permanganates:

Table with 4 columns: Name of Additive, Date, Quantity, Units

ii. Peroxides:

Table with 4 columns: Name of Additive, Date, Quantity, Units

iii. Persulfates:

Table with 4 columns: Name of Additive, Date, Quantity, Units

iv. Other:

Table with 4 columns: Name of Additive, Date, Quantity, Units







Massachusetts Department of Environmental Protection

Bureau of Waste Site Cleanup

CRA REMEDIAL MONITORING REPORT

Pursuant to 310 CMR 40.0800 (SUBPART H)

Remedial System or Monitoring Program: 2 of: 5

BWSC108 -A

Release Tracking Number

3 - 23246

E. STATUS OF ACTIVE REMEDIAL SYSTEM OR ACTIVE REMEDIAL MONITORING PROGRAM DURING REPORTING PERIOD: (cont.)

d. Other additives applied: (total quantity applied at the site for the current reporting period)

Table with 4 columns: Name of Additive, Date, Quantity, Units

Table with 4 columns: Name of Additive, Date, Quantity, Units

e. Check here if any additional Remedial Additives were applied. Attach list of additional additives and include Name of Additive, Date Applied, Quantity Applied and Units (in gals. or lbs.)

F. SHUTDOWNS OF ACTIVE REMEDIAL SYSTEM OR ACTIVE REMEDIAL MONITORING PROGRAM: (check all that apply)

1. The Active Remedial System had unscheduled shutdowns on one or more occasions during the Reporting Period.

a. Number of Unscheduled Shutdowns: b. Total Number of Days of Unscheduled Shutdowns: c. Reason(s) for Unscheduled Shutdowns:

2. The Active Remedial System had scheduled shutdowns on one or more occasions during the Reporting Period.

a. Number of Unscheduled Shutdowns: 1 b. Total Number of Days of Unscheduled Shutdowns: 0.1 c. Reason(s) for Unscheduled Shutdowns: CARBON CHANGE ON 8/7/2013, APPROXIMATELY 3 HOURS

3. The Active Remedial System or Active Remedial Monitoring Program was permanently shutdown/discontinued during the Reporting Period.

a. Date of Final System or Monitoring Program Shutdown: (mm/dd/yyyy)

b. No Further Effluent Discharges.

c. No Further Application of Remedial Additives planned; sufficient monitoring completed to demonstrate compliance with 310 CMR 40.0046.

d. No Further Submittals Planned.

e. Other: Describe:

G. SUMMARY STATEMENTS: (check all that apply for the current reporting period)

1. All Active Remedial System checks and effluent analyses required by the approved plan and/or permit were performed when applicable.

2. There were no significant problems or prolonged (>25% of reporting period) unscheduled shutdowns of the Active Remedial System.

3. The Active Remedial System or Active Remedial Monitoring Program operated in conformance with the MCP, and all applicable approval conditions and/or permits.

4. Indicate any Operational Problems or Notes:

JUNE AND JULY 2013 MONITORING INDICATED LESS THAN 95% REMOVAL, BUT ACCURACY OF PID READINGS UNCER

5. Check here if additional/supporting Information, data, maps, and/or sketches are attached to the form.



## Additional supporting information for:

### CRA REMEDIAL MONITORING REPORT

Pursuant to 310 CMR 40.0800 (Subpart H)

#### **BWSC-108A**, Remedial System 2 of 5, Section G, Question 5: **SUMMARY**

**STATEMENTS:** Check here if additional/supporting Information, data, maps, and/or sketches are attached to the form.

The system has been operating generally under the same conditions for over 6 years, and monthly monitoring has demonstrated that the system has routinely achieved greater than 95% removal.

Monthly monitoring on May 16, 2013 indicated that the system was achieving at least 95% removal, the objective for off-gas treatment efficiency. The June 21, 2013 monthly monitoring results suggested that the system may not have been achieving 95% removal, but, as explained below, there is reason to question such a result.

On June 21, 2013 the photoionization detector (PID) reading for the influent was 9.7 parts per million (ppm), the off-gas reading from the lead carbon tank was 2.2 ppm, and the off-gas reading from the secondary carbon tank was 3.9 ppm (where system effluent emits to the atmosphere). On July 31, 2013 the PID reading for the influent was 19.0 ppm, the off-gas reading from the lead carbon tank was 3.2 ppm, and the off-gas reading from the secondary carbon tank was 13.2 ppm. The accuracy of the PID readings for each of these rounds is uncertain. It is unlikely that the concentration of the off gas from the secondary tank would be higher than the lead tank. Based on the system design and mass loading principals, the secondary carbon tank should not be emitting higher concentrations than the lead carbon tank. This phenomenon could occur if the carbon in the secondary tank was saturated and desorption of VOCs was occurring, but this is very unlikely since the breakthrough of VOCs through activated carbon is typically a gradual process. The monthly monitoring for April, May, June, and July 2013 indicated 96.5%, 100%, 59.7%, and 31% removal, respectively. Breakthrough should not be this significant over such a short period of time and effluent concentrations in the secondary tank should not be higher than the lead tank; therefore, it is likely that the PID readings were inaccurate. We have experienced PID interference at this Site and other sites attributable to humidity during past monitoring rounds, especially during humid summer months. The appearance of inadequate removal is more likely due to anomalous PID readings than a saturated carbon tank.





Massachusetts Department of Environmental Protection  
 Bureau of Waste Site Cleanup  
**CRA REMEDIAL MONITORING REPORT**  
**EFFLUENT/DISCHARGE CONCENTRATIONS**  
 Pursuant to 310 CMR 40.0800 (SUBPART H)  
 Remedial System or Monitoring Program:  of

BWSC108 -B

Release Tracking Number

For each Point of Measurement, indicate the highest concentration detected during the reporting period, of each oil, hazardous material and/or remedial additive.

Point of Measurement	Date (mm/dd/yyyy)	Contaminant, Measurement and/or Indicator Parameter	Influent Concentration (where applicable)	Midpoint Concentration (where applicable)	(check one)		Check here, if ND/BD	Permissible Concentration	Units	Within Permissible Limits? (Y/N)
					<input checked="" type="checkbox"/> Discharge	<input type="checkbox"/> GroundWater Concentration				
SVE	06/21/2013	TOTAL VOCS	9.7	2.2	3.9	<input type="checkbox"/>	<input type="checkbox"/>	0.485	ppmv	No
SVE	07/31/2013	TOTAL VOCS	19.0	3.2	13.2	<input type="checkbox"/>	<input type="checkbox"/>	0.95	ppmv	No
SVE	08/07/2013	TOTAL VOCS	16.3			<input checked="" type="checkbox"/>	<input type="checkbox"/>	0.815	ppmv	Yes
SVE	10/08/2013	TOTAL VOCS	21.9			<input checked="" type="checkbox"/>	<input type="checkbox"/>	1.095	ppmv	Yes
SVE	11/25/2013	TOTAL VOCS	8.3			<input checked="" type="checkbox"/>	<input type="checkbox"/>	0.415	ppmv	Yes

Check here if any additional BWSC108 B, Effluent/Discharge Concentrations Form, is needed.





Bureau of Waste Site Cleanup
CRA REMEDIAL MONITORING REPORT

Pursuant to 310 CMR 40.0800 (SUBPART H)

Release Tracking Number

Remedial System or Monitoring Program: 3 of 5

3 - 23246

A. DESCRIPTION OF ACTIVE REMEDIAL SYSTEM OR ACTIVE REMEDIAL MONITORING PROGRAM:

1. Type of Active Operation and Maintenance Activity: (check all that apply)

a. Active Remedial System: (check all that apply)

- i. NAPL Recovery, ii. Soil Vapor Extraction/Bioventing, iii. Vapor-phase Carbon Adsorption, iv. Groundwater Recovery, v. Dual/Multi-phase Extraction, vi. Aqueous-phase Carbon Adsorption, vii. Air Stripping, viii. Sparging/Biosparging, ix. Cat/Thermal Oxidation, x. Other Describe:

b. Active Exposure Pathway Elimination Measure

Active Exposure Pathway Mitigation System to address (check one): i. Indoor Air, ii. Drinking Water

c. Application of Remedial Additives: (check all that apply)

- i. To the Subsurface, ii. To Groundwater (Injection), iii. To the Surface

d. Active Remedial Monitoring Program Without the Application of Remedial Additives: (check all that apply; Sections C, D and E are not required; attach supporting information, data, maps and/or sketches needed by checking Section G5)

- i. Reactive Wall, ii. Natural Attenuation, iii. Other Describe:

2. Mode of Operation: (check one)

- a. Continuous, b. Intermittent, c. Pulsed, d. One-time Event Only, e. Other:

3. System Effluent/Discharge: (check all that apply)

- a. Sanitary Sewer/POTW, b. Groundwater Re-infiltration/Re-injection: (check one) i. Downgradient, ii. Upgradient, c. Vapor-phase Discharge to Ambient Air: (check one) i. Off-gas Controls, ii. No Off-gas Controls, d. Drinking Water Supply, e. Surface Water (including Storm Drains), f. Other Describe:

B. MONITORING FREQUENCY:

1. Reporting period that is the subject of this submittal:

From: 6/16/2013 To: 12/15/2013 (mm/dd/yyyy) (mm/dd/yyyy)

2. Number of monitoring events during the reporting period: (check one)

a. System Startup: (if applicable)

- i. Days 1, 3, 6, and then weekly thereafter, for the first month. ii. Other Describe:

b. Post-system Startup (after first month) or Monitoring Program:

- i. Monthly, ii. Quarterly, iii. Annually, iii. Other Describe: TOTAL VOCS, ~MONTHLY

3. Check here to certify that the number of required monitoring events were conducted during the reporting period.

C. EFFLUENT/DISCHARGE REGULATION: (check one to indicate how the effluent/discharge limits were established)

- 1. NPDES: (check one) a. Remediation General Permit, b. Individual Permit, c. Emergency Exclusion Effective Date of Permit:

(mm/dd/yyyy)

2. MCP Performance Standard MCP Citations(s): WSC-94-150

3. DEP Approval Letter Date of Letter: (mm/dd/yyyy)

4. Other Describe:







**Massachusetts Department of Environmental Protection**  
*Bureau of Waste Site Cleanup*  
**CRA REMEDIAL MONITORING REPORT**  
 Pursuant to 310 CMR 40.0800 (SUBPART H)  
 Remedial System or Monitoring Program:  of:

BWSC108 -A

Release Tracking Number

-

**D. WASTEWATER TREATMENT PLANT OPERATOR:** (check one)

1. Required due to Remedial Wastewater Treatment Plant in place for more than 30 days.  
 a. Name: \_\_\_\_\_ b. Grade: \_\_\_\_\_  
 c. License No: \_\_\_\_\_ d. License Exp. Date: \_\_\_\_\_  
 (mm/dd/yyyy)
2. Not Required
3. Not Applicable

**E. STATUS OF ACTIVE REMEDIAL SYSTEM OR ACTIVE REMEDIAL MONITORING PROGRAM DURING REPORTING PERIOD:** (check all that apply)

1. The Active Remedial System was functional one or more days during the Reporting Period.
- a. Days System was Fully Functional: 182 b. GW Recovered (gals): \_\_\_\_\_  
 c. NAPL Recovered (gals): \_\_\_\_\_ d. GW Discharged (gals): \_\_\_\_\_  
 e. Avg. Soil Gas Recovery Rate (scfm): 103.4 f. Avg. Sparging Rate (scfm): \_\_\_\_\_

2. Remedial Additives: (check all that apply)

- a. No Remedial Additives applied during the Reporting Period.
- b. Enhanced Bioremediation Additives applied: (total quantity applied at the site for the current reporting period)

i. Nitrogen/Phosphorus:

ii. Peroxides:

					Name of Additive			Date	Quantity
Units	Name of Additive	Date	Quantity	Units					

iii. Microorganisms:

iv. Other:

					Name of Additive			Date	Quantity
Units	Name of Additive	Date	Quantity	Units					

c. Chemical oxidation/reduction additives applied: (total quantity applied at the site for the current reporting period)

i. Permanganates:

Name of Additive	Date	Quantity	Units

ii. Peroxides:

Name of Additive	Date	Quantity	Units

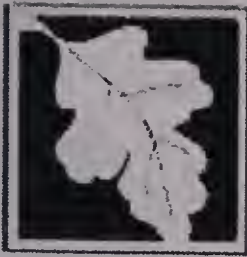
iii. Persulfates:

Name of Additive	Date	Quantity	Units

iv. Other:

Name of Additive	Date	Quantity	Units





Massachusetts Department of Environmental Protection

Bureau of Waste Site Cleanup

CRA REMEDIAL MONITORING REPORT

Pursuant to 310 CMR 40.0800 (SUBPART H)

Remedial System or Monitoring Program: 3

of: 5

BWSC108 -A

Release Tracking Number

3 - 23246

E. STATUS OF ACTIVE REMEDIAL SYSTEM OR ACTIVE REMEDIAL MONITORING PROGRAM DURING REPORTING PERIOD: (cont.)

d. Other additives applied: (total quantity applied at the site for the current reporting period)

Table with 4 columns: Name of Additive, Date, Quantity, Units

Table with 4 columns: Name of Additive, Date, Quantity, Units

e. Check here if any additional Remedial Additives were applied. Attach list of additional additives and include Name of Additive, Date Applied, Quantity Applied and Units (in gals. or lbs.)

F. SHUTDOWNS OF ACTIVE REMEDIAL SYSTEM OR ACTIVE REMEDIAL MONITORING PROGRAM: (check all that apply)

1. The Active Remedial System had unscheduled shutdowns on one or more occasions during the Reporting Period.

a. Number of Unscheduled Shutdowns: b. Total Number of Days of Unscheduled Shutdowns:

c. Reason(s) for Unscheduled Shutdowns:

2. The Active Remedial System had scheduled shutdowns on one or more occasions during the Reporting Period.

a. Number of Unscheduled Shutdowns: b. Total Number of Days of Unscheduled Shutdowns:

c. Reason(s) for Unscheduled Shutdowns:

3. The Active Remedial System or Active Remedial Monitoring Program was permanently shutdown/discontinued during the Reporting Period.

a. Date of Final System or Monitoring Program Shutdown: (mm/dd/yyyy)

b. No Further Effluent Discharges.

c. No Further Application of Remedial Additives planned; sufficient monitoring completed to demonstrate compliance with 310 CMR 40.0046.

d. No Further Submittals Planned.

e. Other: Describe:

G. SUMMARY STATEMENTS: (check all that apply for the current reporting period)

1. All Active Remedial System checks and effluent analyses required by the approved plan and/or permit were performed when applicable.

2. There were no significant problems or prolonged (>25% of reporting period) unscheduled shutdowns of the Active Remedial System.

3. The Active Remedial System or Active Remedial Monitoring Program operated in conformance with the MCP, and all applicable approval conditions and/or permits.

4. Indicate any Operational Problems or Notes:

Empty rectangular box for operational problems or notes.

5. Check here if additional/supporting information, data, maps, and/or sketches are attached to the form.





Massachusetts Department of Environmental Protection  
 Bureau of Waste Site Cleanup  
**CRA REMEDIAL MONITORING REPORT**  
**EFFLUENT/DISCHARGE CONCENTRATIONS**  
 Pursuant to 310 CMR 40.0800 (SUBPART H)  
 Remedial System or Monitoring Program:  of

BWSC108 -B

Release Tracking Number

For each Point of Measurement, indicate the highest concentration detected during the reporting period, of each oil, hazardous material and/or remedial additive.

Point of Measurement	Date (mm/dd/yyyy)	Contaminant, Measurement and/or Indicator Parameter	Influent Concentration (where applicable)	Midpoint Concentration (where applicable)	(check one)		Check here, if ND/BD	Permissible Concentration	Units	Within Permissible Limits? (Y/N)
					<input checked="" type="checkbox"/> Discharge	<input type="checkbox"/> GroundWater Concentration				
SSDS	06/21/2013	TOTAL VOCS	0.2		0.2	<input type="checkbox"/>	<input type="checkbox"/>	8	ppmv	Yes
SSDS	07/31/2013	TOTAL VOCS	0.14		0.115	<input type="checkbox"/>	<input type="checkbox"/>	8	ppmv	Yes
SSDS	10/08/2013	TOTAL VOCS	0.4		0.4	<input type="checkbox"/>	<input type="checkbox"/>	8	ppmv	Yes
SSDS	11/25/2013	TOTAL VOCS	0.1		0.1	<input type="checkbox"/>	<input type="checkbox"/>	8	ppmv	Yes

Check here if any additional BWSC108 B, Effluent/Discharge Concentrations Form, is needed.





Bureau of Waste Site Cleanup
CRA REMEDIAL MONITORING REPORT

Pursuant to 310 CMR 40.0800 (SUBPART H)

Release Tracking Number

Remedial System or Monitoring Program: 4 of 5

3 - 23246

A. DESCRIPTION OF ACTIVE REMEDIAL SYSTEM OR ACTIVE REMEDIAL MONITORING PROGRAM:

1. Type of Active Operation and Maintenance Activity: (check all that apply)

[ ] a. Active Remedial System: (check all that apply)

- [ ] i. NAPL Recovery [ ] ii. Soil Vapor Extraction/Bioventing [ ] iii. Vapor-phase Carbon Adsorption
[ ] iv. Groundwater Recovery [ ] v. Dual/Multi-phase Extraction [ ] vi. Aqueous-phase Carbon Adsorption
[ ] vii. Air Stripping [ ] viii. Sparging/Biosparging [ ] ix. Cat/Thermal Oxidation
[ ] x. Other Describe:

[x] b. Active Exposure Pathway Elimination Measure

Active Exposure Pathway Mitigation System to address (check one): [x] i. Indoor Air [ ] ii. Drinking Water

[ ] c. Application of Remedial Additives: (check all that apply)

- [ ] i. To the Subsurface [ ] ii. To Groundwater (Injection) [ ] iii. To the Surface

[ ] d. Active Remedial Monitoring Program Without the Application of Remedial Additives: (check all that apply; Sections C, D and E are not required; attach supporting information, data, maps and/or sketches needed by checking Section G5)

- [ ] i. Reactive Wall [ ] ii. Natural Attenuation [ ] iii. Other Describe:

2. Mode of Operation: (check one)

- [x] a. Continuous [ ] b. Intermittent [ ] c. Pulsed [ ] d. One-time Event Only [ ] e. Other:

3. System Effluent/Discharge: (check all that apply)

- [ ] a. Sanitary Sewer/POTW
[ ] b. Groundwater Re-infiltration/Re-injection: (check one) [ ] i. Downgradient [ ] ii. Upgradient
[x] c. Vapor-phase Discharge to Ambient Air: (check one) [ ] i. Off-gas Controls [x] ii. No Off-gas Controls
[ ] d. Drinking Water Supply
[ ] e. Surface Water (including Storm Drains)
[ ] f. Other Describe:

B. MONITORING FREQUENCY:

1. Reporting period that is the subject of this submittal: From: 6/16/2013 To: 12/15/2013
(mm/dd/yyyy) (mm/dd/yyyy)

2. Number of monitoring events during the reporting period: (check one)

- [ ] a. System Startup: (if applicable)
[ ] i. Days 1, 3, 6, and then weekly thereafter, for the first month.
[ ] ii. Other Describe:
[x] b. Post-system Startup (after first month) or Monitoring Program:
[ ] i. Monthly
[ ] ii. Quarterly
[x] iii. Annually
[ ] iii. Other Describe:

[x] 3. Check here to certify that the number of required monitoring events were conducted during the reporting period.

C. EFFLUENT/DISCHARGE REGULATION: (check one to indicate how the effluent/discharge limits were established)

- [ ] 1. NPDES: (check one) [ ] a. Remediation General Permit [ ] b. Individual Permit
[ ] c. Emergency Exclusion Effective Date of Permit: (mm/dd/yyyy)

[x] 2. MCP Performance Standard MCP Citations(s): WSC-94-150

[ ] 3. DEP Approval Letter Date of Letter: (mm/dd/yyyy)

[ ] 4. Other Describe:







Massachusetts Department of Environmental Protection

Bureau of Waste Site Cleanup

CRA REMEDIAL MONITORING REPORT

Pursuant to 310 CMR 40.0800 (SUBPART H)

Remedial System or Monitoring Program: 4 of: 5

BWSC108 -A

Release Tracking Number

3 - 23246

D. WASTEWATER TREATMENT PLANT OPERATOR: (check one)

- 1. Required due to Remedial Wastewater Treatment Plant in place for more than 30 days. a. Name: b. Grade: c. License No: d. License Exp. Date: (mm/dd/yyyy)

- 2. Not Required
3. Not Applicable

E. STATUS OF ACTIVE REMEDIAL SYSTEM OR ACTIVE REMEDIAL MONITORING PROGRAM DURING REPORTING PERIOD: (check all that apply)

- 1. The Active Remedial System was functional one or more days during the Reporting Period. a. Days System was Fully Functional: 182 b. GW Recovered (gals): c. NAPL Recovered (gals): d. GW Discharged (gals): e. Avg. Soil Gas Recovery Rate (scfm): 87 f. Avg. Sparging Rate (scfm): 2. Remedial Additives: (check all that apply)

- a. No Remedial Additives applied during the Reporting Period.
b. Enhanced Bioremediation Additives applied: (total quantity applied at the site for the current reporting period)
i. Nitrogen/Phosphorus:

ii. Peroxides:

Table with 5 columns: Units, Name of Additive, Date, Quantity, Units. Includes a summary table for Name of Additive, Date, Quantity.

iii. Microorganisms:

iv. Other:

Table with 5 columns: Units, Name of Additive, Date, Quantity, Units. Includes a summary table for Name of Additive, Date, Quantity.

c. Chemical oxidation/reduction additives applied: (total quantity applied at the site for the current reporting period)

i. Permanganates:

Table with 4 columns: Name of Additive, Date, Quantity, Units.

ii. Peroxides:

Table with 4 columns: Name of Additive, Date, Quantity, Units.

iii. Persulfates:

Table with 4 columns: Name of Additive, Date, Quantity, Units.

iv. Other:

Table with 4 columns: Name of Additive, Date, Quantity, Units.





Massachusetts Department of Environmental Protection

Bureau of Waste Site Cleanup

CRA REMEDIAL MONITORING REPORT

Pursuant to 310 CMR 40.0800 (SUBPART H)

Remedial System or Monitoring Program: 4 of 5

BWSC108 -A

Release Tracking Number

3 - 23246

E. STATUS OF ACTIVE REMEDIAL SYSTEM OR ACTIVE REMEDIAL MONITORING PROGRAM DURING REPORTING PERIOD: (cont.)

d. Other additives applied: (total quantity applied at the site for the current reporting period)

Table with 4 columns: Name of Additive, Date, Quantity, Units

Table with 4 columns: Name of Additive, Date, Quantity, Units

e. Check here if any additional Remedial Additives were applied. Attach list of additional additives and include Name of Additive, Date Applied, Quantity Applied and Units (in gals. or lbs.)

F. SHUTDOWNS OF ACTIVE REMEDIAL SYSTEM OR ACTIVE REMEDIAL MONITORING PROGRAM: (check all that apply)

1. The Active Remedial System had unscheduled shutdowns on one or more occasions during the Reporting Period. a. Number of Unscheduled Shutdowns: 3 b. Total Number of Days of Unscheduled Shutdowns: 182 c. Reason(s) for Unscheduled Shutdowns: 103 WASH. ST(NO ACCESS);31-33 KNOWLTON ST(REPAIR/ACCESS);60 TUFTS(POWER OUTA

2. The Active Remedial System had scheduled shutdowns on one or more occasions during the Reporting Period. a. Number of Unscheduled Shutdowns: b. Total Number of Days of Unscheduled Shutdowns: c. Reason(s) for Unscheduled Shutdowns:

3. The Active Remedial System or Active Remedial Monitoring Program was permanently shutdown/discontinued during the Reporting Period. a. Date of Final System or Monitoring Program Shutdown: (mm/dd/yyyy)

b. No Further Effluent Discharges.

c. No Further Application of Remedial Additives planned; sufficient monitoring completed to demonstrate compliance with 310 CMR 40.0046.

d. No Further Submittals Planned.

e. Other: Describe: -

G. SUMMARY STATEMENTS: (check all that apply for the current reporting period)

1. All Active Remedial System checks and effluent analyses required by the approved plan and/or permit were performed when applicable.

2. There were no significant problems or prolonged (>25% of reporting period) unscheduled shutdowns of the Active Remedial System.

3. The Active Remedial System or Active Remedial Monitoring Program operated in conformance with the MCP, and all applicable approval conditions and/or permits.

4. Indicate any Operational Problems or Notes:

103 WASHINGTON STREET - TENANT DEACTIVATED SSDS FANS. COMMUNICATIONS IN PROGRESS TO REACTIVATE

5. Check here if additional/supporting Information, data, maps, and/or sketches are attached to the form.





Bureau of Waste Site Cleanup
CRA REMEDIAL MONITORING REPORT

Pursuant to 310 CMR 40.0800 (SUBPART H)

Release Tracking Number

3 - 23246

Remedial System or Monitoring Program: 5 of 5

A. DESCRIPTION OF ACTIVE REMEDIAL SYSTEM OR ACTIVE REMEDIAL MONITORING PROGRAM:

1. Type of Active Operation and Maintenance Activity: (check all that apply)

[ ] a. Active Remedial System: (check all that apply)

- [ ] i. NAPL Recovery [ ] ii. Soil Vapor Extraction/Bioventing [ ] iii. Vapor-phase Carbon Adsorption
[ ] iv. Groundwater Recovery [ ] v. Dual/Multi-phase Extraction [ ] vi. Aqueous-phase Carbon Adsorption
[ ] vii. Air Stripping [ ] viii. Sparging/Biosparging [ ] ix. Cat/Thermal Oxidation
[ ] x. Other Describe:

[ ] b. Active Exposure Pathway Elimination Measure

Active Exposure Pathway Mitigation System to address (check one): [ ] i. Indoor Air [ ] ii. Drinking Water

[ ] c. Application of Remedial Additives: (check all that apply)

- [ ] i. To the Subsurface [ ] ii. To Groundwater (Injection) [ ] iii. To the Surface

[x] d. Active Remedial Monitoring Program Without the Application of Remedial Additives: (check all that apply; Sections C, D and E are not required; attach supporting information, data, maps and/or sketches needed by checking Section G5)

- [ ] i. Reactive Wall [x] ii. Natural Attenuation [ ] iii. Other Describe:

2. Mode of Operation: (check one)

- [ ] a. Continuous [ ] b. Intermittent [ ] c. Pulsed [ ] d. One-time Event Only [ ] e. Other:

3. System Effluent/Discharge: (check all that apply)

- [ ] a. Sanitary Sewer/POTW
[ ] b. Groundwater Re-infiltration/Re-injection: (check one) [ ] i. Downgradient [ ] ii. Upgradient
[ ] c. Vapor-phase Discharge to Ambient Air: (check one) [ ] i. Off-gas Controls [ ] ii. No Off-gas Controls
[ ] d. Drinking Water Supply
[ ] e. Surface Water (including Storm Drains)
[ ] f. Other Describe:

B. MONITORING FREQUENCY:

1. Reporting period that is the subject of this submittal:

From: 6/16/2013 To: 12/15/2013
(mm/dd/yyyy) (mm/dd/yyyy)

2. Number of monitoring events during the reporting period: (check one)

[ ] a. System Startup: (if applicable)

- [ ] i. Days 1, 3, 6, and then weekly thereafter, for the first month.
[ ] ii. Other Describe:

[x] b. Post-system Startup (after first month) or Monitoring Program:

- [ ] i. Monthly
[ ] ii. Quarterly
[x] iii. Annually
[ ] iii. Other Describe:

[x] 3. Check here to certify that the number of required monitoring events were conducted during the reporting period.

C. EFFLUENT/DISCHARGE REGULATION: (check one to indicate how the effluent/discharge limits were established)

- [ ] 1. NPDES: (check one) [ ] a. Remediation General Permit [ ] b. Individual Permit
[ ] c. Emergency Exclusion Effective Date of Permit: (mm/dd/yyyy)

[ ] 2. MCP Performance Standard MCP Citations(s):

[ ] 3. DEP Approval Letter Date of Letter: (mm/dd/yyyy)

[ ] 4. Other Describe:





Massachusetts Department of Environmental Protection

Bureau of Waste Site Cleanup

CRA REMEDIAL MONITORING REPORT

Pursuant to 310 CMR 40.0800 (SUBPART H)

Remedial System or Monitoring Program: 5 of 5

BWSC108 -A

Release Tracking Number

3 - 23246

D. WASTEWATER TREATMENT PLANT OPERATOR: (check one)

- 1. Required due to Remedial Wastewater Treatment Plant in place for more than 30 days.
a. Name: b. Grade:
c. License No: d. License Exp. Date: (mm/dd/yyyy)
2. Not Required
3. Not Applicable

E. STATUS OF ACTIVE REMEDIAL SYSTEM OR ACTIVE REMEDIAL MONITORING PROGRAM DURING REPORTING PERIOD: (check all that apply)

- 1. The Active Remedial System was functional one or more days during the Reporting Period.
a. Days System was Fully Functional: b. GW Recovered (gals):
c. NAPL Recovered (gals): d. GW Discharged (gals):
e. Avg. Soil Gas Recovery Rate (scfm): f. Avg. Sparging Rate (scfm):

2. Remedial Additives: (check all that apply)

- a. No Remedial Additives applied during the Reporting Period.
b. Enhanced Bioremediation Additives applied: (total quantity applied at the site for the current reporting period)

i. Nitrogen/Phosphorus:

Table with 4 columns: Name of Additive, Date, Quantity, Units

ii. Peroxides:

Table with 4 columns: Name of Additive, Date, Quantity, Units

iii. Microorganisms:

Table with 4 columns: Name of Additive, Date, Quantity, Units

iv. Other:

Table with 4 columns: Name of Additive, Date, Quantity, Units

c. Chemical oxidation/reduction additives applied: (total quantity applied at the site for the current reporting period)

i. Permanganates:

Table with 4 columns: Name of Additive, Date, Quantity, Units

ii. Peroxides:

Table with 4 columns: Name of Additive, Date, Quantity, Units

iii. Persulfates:

Table with 4 columns: Name of Additive, Date, Quantity, Units

iv. Other:

Table with 4 columns: Name of Additive, Date, Quantity, Units







E. STATUS OF ACTIVE REMEDIAL SYSTEM OR ACTIVE REMEDIAL MONITORING PROGRAM DURING REPORTING PERIOD: (cont.)

Other additives applied: (total quantity applied at the site for the current reporting period)

Table with 4 columns: Name of Additive, Date, Quantity, Units

Table with 4 columns: Name of Additive, Date, Quantity, Units

Check here if any additional Remedial Additives were applied. Attach list of additional additives and include Name of Additive, Date Applied, Quantity Applied and Units (in gals. or lbs.)

F. SHUTDOWNS OF ACTIVE REMEDIAL SYSTEM OR ACTIVE REMEDIAL MONITORING PROGRAM: (check all that apply)

1. The Active Remedial System had unscheduled shutdowns on one or more occasions during the Reporting Period.

a. Number of Unscheduled Shutdowns: b. Total Number of Days of Unscheduled Shutdowns: c. Reason(s) for Unscheduled Shutdowns:

2. The Active Remedial System had scheduled shutdowns on one or more occasions during the Reporting Period.

a. Number of Unscheduled Shutdowns: b. Total Number of Days of Unscheduled Shutdowns: c. Reason(s) for Unscheduled Shutdowns:

3. The Active Remedial System or Active Remedial Monitoring Program was permanently shutdown/discontinued during the Reporting Period.

a. Date of Final System or Monitoring Program Shutdown: (mm/dd/yyyy)

b. No Further Effluent Discharges.

c. No Further Application of Remedial Additives planned; sufficient monitoring completed to demonstrate compliance with 310 CMR 40.0046.

d. No Further Submittals Planned.

e. Other: Describe:

G. SUMMARY STATEMENTS: (check all that apply for the current reporting period)

1. All Active Remedial System checks and effluent analyses required by the approved plan and/or permit were performed when applicable.

2. There were no significant problems or prolonged (>25% of reporting period) unscheduled shutdowns of the Active Remedial System.

3. The Active Remedial System or Active Remedial Monitoring Program operated in conformance with the MCP, and all applicable approval conditions and/or permits.

4. Indicate any Operational Problems or Notes:

Empty rectangular box for operational problems or notes.

5. Check here if additional/supporting Information, data, maps, and/or sketches are attached to the form.



**Additional supporting information for:**

**CRA REMEDIAL MONITORING REPORT**

Pursuant to 310 CMR 40.0800 (Subpart H)

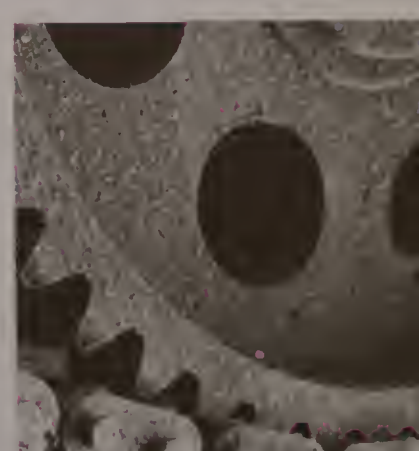
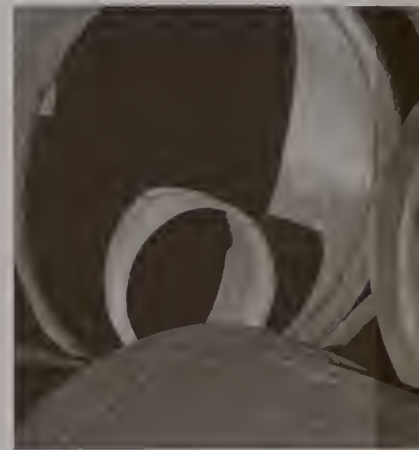
**BWSC-108A**, Remedial System 5 of 5, Section G, Question 5: **SUMMARY STATEMENTS**: Check here if additional/supporting Information, data, maps, and/or sketches are attached to the form.

The Summary Statement for BWSC-108A Remedial System 5 of 5 has been submitted via eDEP, Transmittal No. **627682** as part of the "Phase V Status Report No. 5 and Remedial Monitoring Report No. 20," RTN 3-23246, 50 Tufts Street, Somerville, Massachusetts, dated February 10, 2014.





Geotechnical  
Environmental  
Water Resources  
Ecological





## **Appendix B**

---

### **Property Owner Notification Letters**

**(See enclosed CD behind Appendix B tab)**











Geotechnical  
Environmental  
Water Resources  
Ecological





## **Appendix C**

---

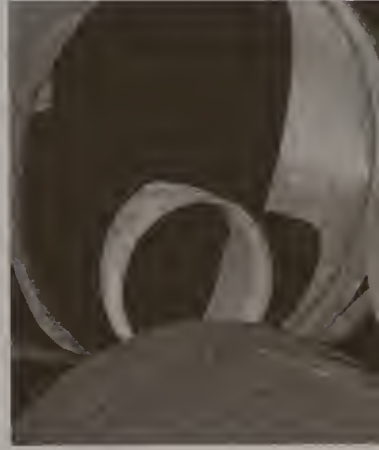
### **Laboratory Testing Reports**

**(See enclosed CD behind Appendix B tab)**





Geotechnical  
Environmental and  
Water Resources  
Engineering







## Appendix D

---

### Field Monitoring Forms and Inspection Logs



**50 Tufts Street Sub-Slab Depressurization System  
Monthly Monitoring Form**

**GENERAL MONITORING INFORMATION**

<b>GEI Field Representative(s):</b>	S. Slater	<b>Monitoring Start Time:</b>	1:00 PM
		<b>Monitoring End Time:</b>	1:40 PM
<b>Date:</b>	06/21/13		
<b>Weather:</b>	Sunny, 80's		

**INSTRUMENTATION INFORMATION**

Instrument	Manufacturer	Model	Calibrated To:	Successful Calibration?
PID (ppm)	RAE Systems	MiniRAE 3000	100 ppm Isobutylene	Y / N 100.0 ppm
Manometer (in. H <sub>2</sub> O)	Dwyer	Mark III-475-0 Series	N/A	Zeroed before each reading
Anemomaster (CFM)	Kanomax	A034	N/A	N/A

**FIELD MEASUREMENTS & OBSERVATIONS**

System Status/Configuration		Pressure/VOC Measurements			System Flow Rate Data	
		Monitoring Point	Pressure (in. H <sub>2</sub> O)	VOC (ppm)	Velocity (ft/min)	System Flowrate (CFM):
Fenced Enclosure Secure?	Yes	West Header	-2.74	6.5	3543	323
Blower On?	Yes	Center Header	-2.71	9.8		
Condensate Accumulated?	No	East Header	-2.29	8.3		
Condensate Drained?	N/A	North Header	-2.83	43.0		
Hour Meter Reading?	53605.6	South Header	-2.86	50.5		
Lead Carbon Unit?	A	Combined System Influent	-5.74	9.7		
Secondary Carbon Unit?	B	Blower Effluent	55	9.7		
Polish Carbon Unit?	N/A	Lead Carbon Effluent	720	2.2		
VFD Setting (Hz)	60	Secondary Carbon Effluent	1.21	3.9		
		System Effluent	Effluent is secondary tank - Tank C offline			
		Ambient Air		0.0		
		Blower Filter Inlet	-13			
		Blower Filter Outlet	-22			

Tank Exterior Monitoring	
Bubbling Paint Visible?	
Tank	Y/N
A	Yes
B	Yes
C	Yes
Rust Visible?	
Tank	Y/N
A	Yes
B	Yes
C	Yes

**ABBREVIATIONS**

ppm = parts per million  
 CFM = cubic feet per minute  
 ft/min = feet per minute  
 PID = photoionization detector  
 N/A = Not Applicable  
 VOC = volatile organic compound  
 in. H<sub>2</sub>O = inches of water column  
 NM = Not Measured  
 VFD = Variable Frequency Drive

**COMMENTS**



**50 Tufts Street Sub-Slab Depressurization System  
Monthly Monitoring Form**

**GENERAL MONITORING INFORMATION**

GEI Field Representative(s):	S. Slater	Monitoring Start Time:	3:30 PM
		Monitoring End Time:	4:00 PM
Date:	07/31/13		
Weather:	Sunny, 80's		

**INSTRUMENTATION INFORMATION**

Instrument	Manufacturer	Model	Calibrated To:	Successful Calibration?
PID (ppm)	RAE Systems	MiniRAE 3000	100 ppm Isobutylene	Y / N 100.2 ppm
Manometer (in. H <sub>2</sub> O)	Dwyer	Mark III-475-0 Series	N/A	Zeroed before each reading
Anemomaster (CFM)	Kanomax	A034	N/A	N/A

**FIELD MEASUREMENTS & OBSERVATIONS**

System Status/Configuration		Pressure/VOC Measurements			System Flow Rate Data	
		Monitoring Point	Pressure (in. H <sub>2</sub> O)	VOC (ppm)	Velocity (ft/min)	System Flowrate (CFM):
Fenced Enclosure Secure?	Yes	West Header	-2.70	10.5	3524	302.5
Blower On?	Yes	Center Header	-2.65	14.2		
Condensate Accumulated?	No	East Header	-2.26	10.9		
Condensate Drained?	N/A	North Header	-2.81	108		
Hour Meter Reading?	54567.6	South Header	-2.79	125		
Lead Carbon Unit?	A	Combined System Influent	-5.68	18.3		
Secondary Carbon Unit?	B	Blower Effluent	55	19.0		
Polish Carbon Unit?	N/A	Lead Carbon Effluent	> 20	3.2		
VFD Setting (Hz)	60	Secondary Carbon Effluent	1.18	13.2		
		System Effluent	Effluent is secondary tank - Tank C offline			
		Ambient Air		0.0		
		Blower Filter Inlet	-13			
		Blower Filter Outlet	-22			

Tank Exterior Monitoring	
Bubbling Paint Visible?	
Tank	Y/N
A	Yes
B	Yes
C	Yes
Rust Visible?	
Tank	Y/N
A	Yes
B	Yes
C	Yes

**ABBREVIATIONS**

ppm = parts per million  
 CFM = cubic feet per minute  
 ft/min = feet per minute  
 PID = photoionization detector  
 N/A = Not Applicable  
 VOC = volatile organic compound  
 in. H<sub>2</sub>O = inches of water column  
 NM = Not Measured  
 VFD = Variable Frequency Drive

**COMMENTS**

I could hear a slight whine from the motor that sounded a lot like the leak. Will check on this and see if it gets worse over the next couple months.



**50 Tufts Street Sub-Slab Depressurization System  
Monthly Monitoring Form**

**GENERAL MONITORING INFORMATION**

<b>GEI Field Representative(s):</b>	S. Slater	<b>Monitoring Start Time:</b>	11:15 AM
	M. Keller	<b>Monitoring End Time:</b>	
<b>Date:</b>	08/07/13		
<b>Weather:</b>	Sunny, ~75°		

**INSTRUMENTATION INFORMATION**

Instrument	Manufacturer	Model	Calibrated To:	Successful Calibration?
PID (ppm)	RAE Systems	MiniRAE 3000	100 ppm Isobutylene	Y / N 100.0 ppm
Manometer (in. H <sub>2</sub> O)	Dwyer	Mark III-475-0 Series	N/A	Zeroed before each reading
Anemomaster (CFM)	Kanomax	A034	N/A	N/A

**FIELD MEASUREMENTS & OBSERVATIONS**

System Status/Configuration	Pressure/VOC Measurements			System Flow Rate Data		
Fenced Enclosure Secure?	Yes	Monitoring Point	Pressure (in. H <sub>2</sub> O)	VOC (ppm)	Velocity (ft/min)	System Flowrate (CFM):
Blower On?	Yes	West Header	-2.81	10.9	3583	305.9
Condensate Accumulated?	No	Center Header	-2.62	9.0		
Condensate Drained?	N/A	East Header	-2.32	9.1		
Hour Meter Reading?	54728.3	North Header	-2.84	106.5		
Lead Carbon Unit?	A	South Header	-2.92	163.5		
Secondary Carbon Unit?	B	Combined System Influent	-6.57	15.7		
Polish Carbon Unit?	N/A	Blower Effluent	35	16.3		
VFD Setting (Hz)	60	Lead Carbon Effluent	> 20	0		
		Secondary Carbon Effluent	1.36	0		
		System Effluent	Effluent is secondary tank - Tank C offline			
		Ambient Air		0		
		Blower Filter Inlet	-14			
		Blower Filter Outlet	-25			

Tank Exterior Monitoring	
Bubbling Paint Visible?	
Tank	Y/N
A	Yes
B	Yes
C	Yes
Rust Visible?	
Tank	Y/N
A	Yes
B	Yes
C	Yes

**ABBREVIATIONS**

ppm = parts per million  
 CFM = cubic feet per minute  
 ft/min = feet per minute  
 PID = photoionization detector  
 N/A = Not Applicable  
 VOC = volatile organic compound  
 in. H<sub>2</sub>O = inches of water column  
 NM = Not Measured  
 VFD = Variable Frequency Drive

**COMMENTS**

Leak on pipe leading to filter, pulling air into system. System off ~3 hours before monitoring. Changed blower filter, replace tubing in cabon.





**50 Tufts Street Sub-Slab Depressurization System  
Monthly Monitoring Form**

**GENERAL MONITORING INFORMATION**

<b>GEI Field Representative(s):</b>	S. Slater	<b>Monitoring Start Time:</b>	1:30 PM
	M. Keller	<b>Monitoring End Time:</b>	2:00 PM
<b>Date:</b>	10/08/13		
<b>Weather:</b>	Sun, wind, 60'		

**INSTRUMENTATION INFORMATION**

Instrument	Manufacturer	Model	Calibrated To:	Successful Calibration?
PID (ppm)	RAE Systems	MiniRAE 3000	100 ppm Isobutylene	Y / N 100.0 ppm
Manometer (in. H <sub>2</sub> O)	Dwyer	Mark III-475-0 Series	N/A	Zeroed before each reading
Anemomaster (CFM)	Kanomax	A034	N/A	N/A

**FIELD MEASUREMENTS & OBSERVATIONS**

System Status/Configuration		Pressure/VOC Measurements			System Flow Rate Data	
		Monitoring Point	Pressure (in. H <sub>2</sub> O)	VOC (ppm)	Velocity (ft/min)	System Flowrate (CFM):
Fenced Enclosure Secure?	Yes	West Header	-2.70	13.8	3740	316
Blower On?	Yes	Center Header	-2.63	16.0		
Condensate Accumulated?	No	East Header	-2.16	10.6		
Condensate Drained?	N/A	North Header	-2.80	120.9		
Hour Meter Reading?	56218.3	South Header	-2.83	130.3		
Lead Carbon Unit?	A	Combined System Influent	-6.07	20.9		
Secondary Carbon Unit?	B	Blower Effluent	45	21.9		
Polish Carbon Unit?	N/A	Lead Carbon Effluent	720	0.0		
VFD Setting (Hz)	60	Secondary Carbon Effluent	1.36	0.0		
		System Effluent	Effluent is secondary tank - Tank C offline			
		Ambient Air		0.0		
		Blower Filter Inlet	-13			
		Blower Filter Outlet	-23			

Tank Exterior Monitoring	
Bubbling Paint Visible?	
Tank	Y/N
A	Yes
B	Yes
C	Yes

Rust Visible?	
Tank	Y/N
A	Yes
B	Yes
C	Yes

**ABBREVIATIONS**

ppm = parts per million  
 CFM = cubic feet per minute  
 ft/min = feet per minute  
 PID = photoionization detector  
 N/A = Not Applicable  
 VOC = volatile organic compound  
 in. H<sub>2</sub>O = inches of water column  
 NM = Not Measured  
 VFD = Variable Frequency Drive

**COMMENTS**

C-1 Still broken. C-2 also now broken. Pictures taken of both.



**50 Tufts Street Sub-Slab Depressurization System  
Monthly Monitoring Form**

**GENERAL MONITORING INFORMATION**

<b>GEI Field Representative(s):</b>	M. Keller	<b>Monitoring Start Time:</b>	11:55 AM
		<b>Monitoring End Time:</b>	12:30 PM
<b>Date:</b>	11/25/13		
<b>Weather:</b>	Cloudy, 30°		

**INSTRUMENTATION INFORMATION**

Instrument	Manufacturer	Model	Calibrated To:	Successful Calibration?
PID (ppm)	RAE Systems	MiniRAE 3000	100 ppm Isobutylene	Y / N 99.9 ppm
Manometer (in. H <sub>2</sub> O)	Dwyer	Mark III-475-0 Series	N/A	Zeroed before each reading
Anemomaster (CFM)	Kanomax	A034	N/A	N/A

**FIELD MEASUREMENTS & OBSERVATIONS**

System Status/Configuration		Pressure/VOC Measurements			System Flow Rate Data	
		Monitoring Point	Pressure (in. H <sub>2</sub> O)	VOC (ppm)	Velocity (ft/min)	System Flowrate (CFM):
Fenced Enclosure Secure?	Yes	West Header	-2.7	8.2	3627	319.5
Blower On?	Yes	Center Header	-2.6	9.6		
Condensate Accumulated?	N/A	East Header	-2.1	7.7		
Condensate Drained?	N/A	North Header	-2.7	18.1		
Hour Meter Reading?	57351.6	South Header	-2.8	15.9		
Lead Carbon Unit?	A	Combined System Influent	-6.1	7.3		
Secondary Carbon Unit?	B	Blower Effluent	53	8.3		
Polish Carbon Unit?	N/A	Lead Carbon Effluent	> 20	0		
VFD Setting (Hz)	60	Secondary Carbon Effluent	1.29	0		
		System Effluent	Effluent is secondary tank - Tank C offline			
		Ambient Air		0		
		Blower Filter Inlet	-13			
		Blower Filter Outlet	-23			

Tank Exterior Monitoring	
Bubbling Paint Visible?	
Tank	Y/N
A	Yes
B	Yes
C	Yes
Rust Visible?	
Tank	Y/N
A	Yes
B	Yes
C	Yes

**ABBREVIATIONS**

ppm = parts per million  
 CFM = cubic feet per minute  
 ft/min = feet per minute  
 PID = photoionization detector  
 N/A = Not Applicable  
 VOC = volatile organic compound  
 in. H<sub>2</sub>O = inches of water column  
 NM = Not Measured  
 VFD = Variable Frequency Drive

**COMMENTS**

There was a loud whine coming from the blower. To alleviate the sound, I opened the recirculation valve. Monitoring was done again after the valve was opened.



**Capuano Center Sub-Slab Depressurization System  
Monthly Mechanical Inspection Log**

**GENERAL INFORMATION**

GEI Field Representatives: S. Slater  
Date: 06/21/13  
Weather: Sun, 80°

Start-time of monitoring work: 2:00 PM  
End-time of monitoring work: 2:15 PM

**INSTRUMENTATION INFORMATION**

Instrument	Manufacturer	Model	GEI Identification No.	Calibrant	Successful Calibration
PID (ppb)	RAE Systems	ppbRAE3000	PINE Rental	10 ppm Isobutylene	Yes
Manometer (in. H <sub>2</sub> O)	Dwyer	Mark III-475-0000-FM	N/A	N/A	Zeroed before each reading
Hot Wire Thermo-Anemometer (ft/min)	Kanomax	A034	050183	N/A	Zeroed before each reading

**OBSERVATIONS AND MEASUREMENTS**

**ENCLOSURE MEASUREMENTS**

Shed Secure? Yes  
Condensate Accumulated? No  
Condensate Drained? N/A

Combined Influent Flow Rate

Average Flow Rate (cfm)	109.2
-------------------------	-------

**System Monitoring Points**

Port ID	Typical Vacuum Range (in. H <sub>2</sub> O)	Vacuum (in. H <sub>2</sub> O)	Typical Range of VOCs (ppb)	VOC Concentration (ppb)
Manifold 12	-0.300 to -0.500	-0.34	0 to 2000	0
Manifold 13	-0.300 to -0.500	-0.36	0 to 2000	300
Manifold 14	-0.300 to -0.500	-0.32	0 to 2000	300
Combined Influent	-0.600 to -0.700	-0.66	0 to 2000	200
Effluent	0.480 to 0.600	0.62	0 to 2000	200

**COMMENTS**

Notes:

- |  |                                 |
|--|---------------------------------|
| 1. Manifold 12 is the manifold pipe for rooms 122 and 126.<br>Manifold 13 is the manifold pipe for rooms 134 and 138.<br>Manifold 14 is the manifold pipe for rooms 142 and 146. | 6. ft = feet.                   |
| 2. PID = photoionization detector.   | 7. cfm = cubic feet per minute. |
| 3. ppb = parts per billion.  | 8. N/A = Not Applicable.        |
| 4. ppm = parts per million.  | 9. NM = Not Measured.           |
| 5. in. H <sub>2</sub> O = inches of water column.  |                                 |



**Capuano Center Sub-Slab Depressurization System  
Monthly Mechanical Inspection Log**

**GENERAL INFORMATION**

GEI Field Representatives:                     S. Slater                      
 \_\_\_\_\_  
 Date:                     07/31/13                      
 \_\_\_\_\_  
 Weather:                     Sun, 80°                      
 \_\_\_\_\_

Start-time of monitoring work:                     3:15 PM                      
 \_\_\_\_\_  
 End-time of monitoring work:                     3:30 PM                      
 \_\_\_\_\_

**INSTRUMENTATION INFORMATION**

Instrument	Manufacturer	Model	GEI Identification No.	Calibrant	Successful Calibration
PID (ppb)	RAE Systems	ppbRAE3000	PINE Rental	10 ppm Isobutylene	Yes, 10.0 ppm
Manometer (in. H <sub>2</sub> O)	Dwyer	Mark III-475-0000-FM	N/A	N/A	Zeroed before each reading
Hot Wire Thermo-Anemometer (ft/min)	Kanomax	A034	050183	N/A	Zeroed before each reading

**OBSERVATIONS AND MEASUREMENTS**

**ENCLOSURE MEASUREMENTS**

Shed Secure?                     Yes                      
 \_\_\_\_\_  
 Condensate Accumulated?                     No                      
 \_\_\_\_\_  
 Condensate Drained?                     N/A                      
 \_\_\_\_\_

Combined Influent Flow Rate

Average Flow Rate (cfm)	101.2
-------------------------	-------

System Monitoring Points

Port ID	Typical Vacuum Range (in. H <sub>2</sub> O)	Vacuum (in. H <sub>2</sub> O)	Typical Range of VOCs (ppb)	VOC Concentration (ppb)
Manifold 12	-0.300 to -0.500	-0.308	0 to 2000	0
Manifold 13	-0.300 to -0.500	-0.313	0 to 2000	290
Manifold 14	-0.300 to -0.500	-0.301	0 to 2000	350
Combined Influent	-0.600 to -0.700	-0.637	0 to 2000	140
Effluent	0.480 to 0.600	0.583	0 to 2000	115

**COMMENTS**

**Notes:**

- |   |   |
|---|---|
| <ul style="list-style-type: none"> <li>1. Manifold 12 is the manifold pipe for rooms 122 and 126.</li> <li>Manifold 13 is the manifold pipe for rooms 134 and 138.</li> <li>Manifold 14 is the manifold pipe for rooms 142 and 146.</li> <li>2. PID = photoionization detector.</li> <li>3. ppb = parts per billion.</li> <li>4. ppm = parts per million.</li> <li>5. in. H<sub>2</sub>O = inches of water column.</li> </ul> | <ul style="list-style-type: none"> <li>6. ft = feet.</li> <li>7. cfm = cubic feet per minute.</li> <li>8. N/A = Not Applicable.</li> <li>9. NM = Not Measured.</li> </ul> |
|---|---|





**Capuano Center Sub-Slab Depressurization System  
Monthly Mechanical Inspection Log**

**GENERAL INFORMATION**

GEI Field Representatives:	<u>S. Slater</u>	Outdoor Monitoring	Indoor Monitoring
	<u>M. Keller</u>	Start-time of monitoring work:	1415
Date:	<u>10/08/13</u>	End-time of monitoring work:	1520
Weather:	<u>Sun, Wind, 60°</u>		1545

**INSTRUMENTATION INFORMATION**

Instrument	Manufacturer	Model	GEI Identification No.	Calibrant	Successful Calibration
PID (ppb)	RAE Systems	miniRAE3000		100 ppm Isobutylene	Yes 100
Manometer (in. H <sub>2</sub> O)	Dwyer	Mark III-475-0000-FM	N/A	N/A	Zeroed before each reading
Hot Wire Thermo-Anemometer (ft/min)	Kanomax	A034	050183	N/A	Zeroed before each reading

**OBSERVATIONS AND MEASUREMENTS**

**ENCLOSURE MEASUREMENTS**

Shed Secure?	<u>Yes</u>	Combined Influent Flow Rate	
Condensate Accumulated?	<u>No</u>	Average Flow Rate (cfm)	NM
Condensate Drained?	<u>NA</u>		

System Monitoring Points

Port ID	Typical Vacuum Range (in. H <sub>2</sub> O)	Vacuum (in. H <sub>2</sub> O)	Typical Range of VOCs (ppb)	VOC Concentration (ppm)
Manifold 12	-0.300 to -0.500	-0.327	0 to 2000	0.2
Manifold 13	-0.300 to -0.500	-0.338	0 to 2000	0.4
Manifold 14	-0.300 to -0.500	-0.310	0 to 2000	0.5
Combined Influent	-0.600 to -0.700	-0.649	0 to 2000	0.4
Effluent	0.480 to 0.600	0.675	0 to 2000	0.4

**EXTERIOR EXTRACTION MONITORING POINT MEASUREMENTS**

Monitoring Point Identification	Status (on/off)	Vacuum (in. H <sub>2</sub> O)	VOC Concentration (ppb)	Flow (cfm)
122-1	on	-0.2	0.1	8.7
122-2	on	-0.212	0.2	5.8
122-3	on	-0.194	0.1	10.6
126-1	on	-0.222	0.1	1.5
126-2	on	-0.186	0.1	7.8
126-3	on	-0.223	0.2	4.8
134-1	on	-0.302	0.1	NM
134-2	on	-0.324	0.1	2.5
134-3	on	-0.301	0.2	7.3
138-1	on	-0.321	0.1	1.6
138-2	on	-0.318	0.1	3.2
138-3	on	-0.306	0.1	10.4
142-1	on	-0.22	0.4	16.2
142-2	on	-0.224	0.1	12.9
142-3	on	-0.213	0.1	16.9
146-1	on	-0.194	0.1	15
146-2	on	-0.202	0.3	10.8
146-3	on	-0.198	0.2	14.1



**Capuano Center Sub-Slab Depressurization System  
Monthly Mechanical Inspection Log**

**INTERIOR MEASUREMENTS**

**Ambient Air Measurements**

Classroom	VOC Concentration (ppb)
122	0.2
126	0.2
134	0.3
138	0.4
133	0.2
137	0.3
142	0.4
146	0.5

**Sub-Slab Monitoring Points**

Monitoring Point Identification	Vacuum (in. H <sub>2</sub> O)	VOC Concentration (ppb)
Room 122A	NM	NM
Room 126A	0.300	0
Room 133A	0.600	0
Room 137A	0.300	0
Room 142A	0.400	-0.008
Room 146A	0.400	-0.006

**COMMENTS**

122A - Sub-slab box was flooded

**Notes:**

- |  |                                 |
|--|---------------------------------|
| 1. Manifold 12 is the manifold pipe for rooms 122 and 126.<br>Manifold 13 is the manifold pipe for rooms 134 and 138.<br>Manifold 14 is the manifold pipe for rooms 142 and 146. | 6. ft = feet.                   |
| 2. PID = photoionization detector.   | 7. cfm = cubic feet per minute. |
| 3. ppb = parts per billion.  | 8. N/A = Not Applicable.        |
| 4. ppm = parts per million.  | 9. NM = Not Measured.           |
| 5. in. H <sub>2</sub> O = inches of water column.  |                                 |







60 Tufts Street  
SSDS Field Monitoring Form

**GENERAL MONITORING INFORMATION**

GEI Field Representative(s):	S. Slater	Monitoring Start Time:	1345
		Monitoring End Time:	1355
Date:	06/21/13		
Weather:	Sunny, 80's		

**INSTRUMENTATION INFORMATION**

Instrument	Manufacturer	Model	Serial No.	Calibrated To:	Successful Calibration?
PID (ppm)	RAE Systems	MiniRAE 3000	BEI	100 ppm Isobutylene Time:	<input checked="" type="radio"/> / N Cal. Reading (ppm): 100
Manometer (in. H <sub>2</sub> O)	Dwyer	Mark III-475-0 Series	GEI	N/A	Zeroed before each reading? <input checked="" type="radio"/> / N
Anemomaster (CFM)	Kanomax	A034	GEI	N/A	N/A

**FIELD MEASUREMENTS / OBSERVATIONS**

System Status/Configuration		Pressure/VOC Measurements			System Flow Rate Data	
		Monitoring Point	Pressure (in. H <sub>2</sub> O)	VOC (ppm)	Velocity (feet per minute)	System Flowrate (CFM): = (PI * r <sup>2</sup> ) * ft per min
Blower Enclosure Secure?	<input checked="" type="radio"/> / N	North Header	NM*	NM*	2835	240
Blower On?	<input checked="" type="radio"/> / N	South Header	NM*	NM*		
Influent Condensate Accumulated?	Y / <input checked="" type="radio"/> N	Combined System Influent	-5.24	0.0		
Effluent Condensate Accumulated?	Y / <input checked="" type="radio"/> N	System Effluent	N/A	0.0		
Condensate Drained?	Y / <input checked="" type="radio"/> N	Blower Filter Inlet	-11			
Hour Meter Reading	N/A	Blower Filter Outlet	-24			
VFD Setting (Hz)	60	Ambient Air Outside Blower Enclosure		0.0		

**NOTES:**

1. ppm = parts per million.
2. CFM = cubic feet per minute.      Temp in enclosure = 104° F
3. PID = photoionization detector.
4. N/A = Not Applicable.
5. VOC = volatile organic compound.
6. in. H<sub>2</sub>O = inches of water column.
7. VFD = variable frequency drive.
8. Hz = Hertz.

**COMMENTS:**

\* Note Headers not measured because we did not have access to the building.





**60 Tufts Street  
SSDS Field Monitoring Form**

**GENERAL MONITORING INFORMATION**

GEI Field Representative(s):	S. Slater	Monitoring Start Time:	1605
Date:	07/31/13	Monitoring End Time:	1625
Weather:	Sunny, 80° F		

**INSTRUMENTATION INFORMATION**

Instrument	Manufacturer	Model	Serial No.	Calibrated To:	Successful Calibration?
PID (ppm)	RAE Systems	ppbRAE 3000	Pine	10 ppm Isobutylene Time:	<input checked="" type="radio"/> Y / <input type="radio"/> N Cal. Reading (ppm):
Manometer (in. H <sub>2</sub> O)	Dwyer	Mark III-475-0 Series		N/A	<input checked="" type="radio"/> Zeroed before each reading? Y / N
Anemomaster (CFM)	Kanomax	A034		N/A	N/A

**FIELD MEASUREMENTS / OBSERVATIONS**

System Status/Configuration		Pressure/VOC Measurements			System Flow Rate Data	
		Monitoring Point	Pressure (in. H <sub>2</sub> O)	VOC (ppm)	Velocity (feet per minute)	System Flowrate (CFM): = (PI * r <sup>2</sup> ) * ft per min
Blower Enclosure Secure?	<input checked="" type="radio"/> Y / <input type="radio"/> N	North Header	NM*	NM*	2520	213.4
Blower On?	<input checked="" type="radio"/> Y / <input type="radio"/> N	South Header	NM*	NM*		
Influent Condensate Accumulated?	Y / <input checked="" type="radio"/> N	Combined System Influent	-5.28	2.16		
Effluent Condensate Accumulated?	Y / <input checked="" type="radio"/> N	System Effluent	N/A	2.29		
Condensate Drained?	Y / <input checked="" type="radio"/> N	Blower Filter Inlet	-11			
Hour Meter Reading	<input checked="" type="radio"/> N/A	Blower Filter Outlet	-24			
VFD Setting (Hz)	60	Ambient Air Outside Blower Enclosure		0		

**NOTES:**

1. ppm = parts per million.
2. CFM = cubic feet per minute.
3. PID = photoionization detector.
4. N/A = Not Applicable.
5. VOC = volatile organic compound.
6. in. H<sub>2</sub>O = inches of water column.
7. VFD = variable frequency drive.
8. Hz = Hertz.

**COMMENTS:**

\* Note Headers not measured because we did not have access to the building.



**60 Tufts Street  
SSDS Field Monitoring Form**

**GENERAL MONITORING INFORMATION**

<b>GEI Field Representative(s):</b>	S. Slater	<b>Monitoring Start Time:</b>	1400
	M. Keller	<b>Monitoring End Time:</b>	1410
<b>Date:</b>	10/08/13		
<b>Weather:</b>	Sun, Wind, 60'		

**INSTRUMENTATION INFORMATION**

Instrument	Manufacturer	Model	Serial No.	Calibrated To:	Successful Calibration?
PID (ppm)	RAE Systems	MiniRAE 3000		100 ppm Isobutylene Time:	<input checked="" type="radio"/> Y / N Cal. Reading (ppm):
Manometer (in. H <sub>2</sub> O)	Dwyer	Mark III-475-0 Series		N/A	<input checked="" type="radio"/> Zeroed before each reading? Y / N
Anemomaster (CFM)	Kanomax	A034		N/A	N/A

**FIELD MEASUREMENTS / OBSERVATIONS**

System Status/Configuration	Pressure/VOC Measurements			System Flow Rate Data	
	Monitoring Point	Pressure (in. H <sub>2</sub> O)	VOC (ppm)	Velocity (feet per minute)	System Flowrate (CFM): = (PI * r <sup>2</sup> ) * ft per min
Blower Enclosure Secure? <input checked="" type="radio"/> Y / N	North Header	NM*	NM*		222
Blower On? <input checked="" type="radio"/> Y / N	South Header	NM*	NM*		
Influent Condensate Accumulated? <input checked="" type="radio"/> Y / N	Combined System Influent	-5.42	0.1		
Effluent Condensate Accumulated? <input checked="" type="radio"/> Y / N	System Effluent	N/A	0.1		
Condensate Drained? <input checked="" type="radio"/> Y / N	Blower Filter Inlet	24			
Hour Meter Reading	Blower Filter Outlet	11			
VFD Setting (Hz)	Ambient Air Outside Blower Enclosure		0.0		

**NOTES:**

1. ppm = parts per million.
2. CFM = cubic feet per minute.
3. PID = photoionization detector.
4. N/A = Not Applicable.
5. VOC = volatile organic compound.
6. in. H<sub>2</sub>O = inches of water column.
7. VFD = variable frequency drive.
8. Hz = Hertz.

**COMMENTS:**

\* Note: Headers not measured because we did not have access to the building.



**60 Tufts Street  
SSDS Field Monitoring Form**

**GENERAL MONITORING INFORMATION**

<b>GEI Field Representative(s):</b>	M. Keller	<b>Monitoring Start Time:</b>	12:30 PM
		<b>Monitoring End Time:</b>	12:45 PM
<b>Date:</b>	11/25/13		
<b>Weather:</b>	Cloudy, 30°		

**INSTRUMENTATION INFORMATION**

Instrument	Manufacturer	Model	Serial No.	Calibrated To:	Successful Calibration?
PID (ppm)	RAE Systems	MiniRAE 3000		100 ppm Isobutylene Time:	<input checked="" type="radio"/> / N Cal. Reading (ppm): 99.8
Manometer (in. H <sub>2</sub> O)	Dwyer	Mark III-475-0 Series		N/A	Zeroed before each reading? <input checked="" type="radio"/> / N
Anemomaster (CFM)	Kanomax	A034		N/A	N/A

**FIELD MEASUREMENTS / OBSERVATIONS**

System Status/Configuration		Pressure/VOC Measurements			System Flow Rate Data	
		Monitoring Point	Pressure (in. H <sub>2</sub> O)	VOC (ppm)	Velocity (feet per minute)	System Flowrate (CFM): = (PI * r <sup>2</sup> ) * ft per min
Blower Enclosure Secure?	<input checked="" type="radio"/> / N	North Header	NM*	NM*	2584	220
Blower On?	<input checked="" type="radio"/> / N	South Header	NM*	NM*		
Influent Condensate Accumulated?	<input checked="" type="radio"/> / N	Combined System Influent	-5.17	0		
Effluent Condensate Accumulated?	<input checked="" type="radio"/> / N	System Effluent	N/A	0		
Condensate Drained?	<input checked="" type="radio"/> / N	Blower Filter Inlet	-10			
Hour Meter Reading	N/A	Blower Filter Outlet	-22			
VFD Setting (Hz)	60	Ambient Air Outside Blower Enclosure		0		

**NOTES:**

1. ppm = parts per million.
2. CFM = cubic feet per minute.
3. PID = photoionization detector.
4. N/A = Not Applicable.
5. VOC = volatile organic compound.
6. in. H<sub>2</sub>O = inches of water column.
7. VFD = variable frequency drive.
8. Hz = Hertz.

**COMMENTS:**

\* Note: Headers not measured because we did not have access to the building.





Geotechnical  
Environmental and  
Water Resources  
Engineering







# Appendix E

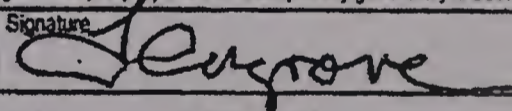
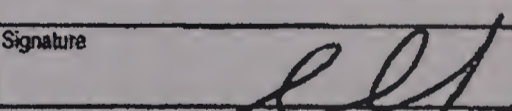
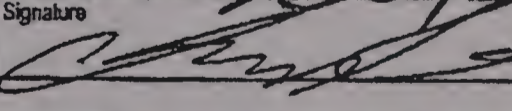
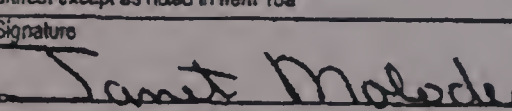
---

## Disposal Documentation



Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039

<b>UNIFORM HAZARDOUS WASTE MANIFEST</b>		1. Generator ID Number <b>M A C 3 0 0 0 1 1 2 7 7</b>	2. Page 1 of <b>1</b>	3. Emergency Response Phone <b>800-698-1865</b>	4. Manifest Tracking Number <b>010065919 JJK</b>				
5. Generator's Name and Mailing Address <b>Unifirst Corporation 68 Jonsplin Road Wilmington MA 01887</b>			Generator's Site Address (if different than mailing address) <b>Unifirst Corporation 50 Turin Street Somerville MA 02143</b>						
Generator's Phone: <b>9 7 8 6 5 8 - 8 8 8 8</b>									
6. Transporter 1 Company Name <b>New England Disposal Technologies, Inc.</b>				U.S. EPA ID Number <b>M A C 3 0 0 0 0 8 0 5 9</b>					
7. Transporter 2 Company Name <del>New England Disposal Technologies, Inc.</del> <b>Moume Glass Inc</b>				U.S. EPA ID Number <del>M A C 3 0 0 0 0 8 0 5 9</del> <b>SK</b>					
8. Designated Facility Name and Site Address <b>Rineco 1007 Vulcan Road - Haskell Benton AR 72015</b>				U.S. EPA ID Number <b>NSD986607380</b>					
Facility's Phone: <b>501 778-6325 9089</b>				<b>A R D 9 8 1 0 5 7 8 7 0</b>					
GENERATOR	9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers		11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes		
		1. <b>RQ NA3077, Hazardous waste, solid, n.o.s. (carb., perchloroethylene) 9, PGIII (RQ D039)</b>	No.	Type					
		2.	<b>18</b>	<b>DM</b>	<b>5850</b>	<b>P</b>		<b>D039 U210</b>	
		3.							
		4.							
14. Special Handling Instructions and Additional Information <b>1/10/09-15077 ERG#111</b>									
<b>228873</b>									
15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.									
Generator's/Offoror's Printed/Typed Name <b>TIM COSGRAVE</b>			Signature 			Month Day Year <b>18   7   13</b>			
INTL	16. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: _____ Date leaving U.S.: _____								
	17. Transporter Acknowledgment of Receipt of Materials								
TRANSPORTER	Transporter 1 Printed/Typed Name <b>Shawn M. Ford</b>			Signature 			Month Day Year <b>08   07   13</b>		
	Transporter 2 Printed/Typed Name <b>Charles Rovee</b>			Signature 			Month Day Year <b>18   13   13</b>		
DESIGNATED FACILITY	18. Discrepancy								
	18a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection								
	18b. Alternate Facility (or Generator) Manifest Reference Number: _____ U.S. EPA ID Number _____								
	18c. Signature of Alternate Facility (or Generator) _____ Month Day Year _____								
19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)									
1. <b>H061</b>		2.		3.		4.			
20. Designated Facility Owner or Operator. Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a									
Printed/Typed Name <b>Tamot Malodeti</b>			Signature 			Month Day Year <b>18   16   13</b>			



